

## THE EDUCATION OF BACKWARD CHILDREN



Also by M E HIGHFIELD

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THE REVISED SOUTHEND ATTAINMENT TEST IN  
MECHANICAL ARITHMETIC HANDBOOK

# THE EDUCATION OF BACKWARD CHILDREN

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## PREFACE

THIS book came into being from the desire to present the results of almost three years' experimentation in the organization of work in the schools of the Southend-on-Sea Education Authority with dull and educationally retarded children. It is not intended to claim for this work that it introduces a new departure in educational method or even that the methods described are necessarily the best. It does attempt to suggest, however, a comprehensive scheme of progressive teaching-methods in number and English suitable for this type of child. The sequence of individual schemes of work and of the materials suitable for each stage have required fine grading, and for this reason it has been necessary to prepare a comprehensive scheme capable of general application. Within this framework further experimentation in detail of method can proceed. The preparation of the scheme has been a collective effort on the part of all concerned, and each school has accepted these collective findings as the basis of work with its special classes. Thus each special class is at present working on the same English and number scheme, but from this point individuality and variety in method can be introduced by individual schools.

A tribute must be paid to the skilful and enthusiastic co-operation of the teachers, who have given a considerable amount of time and energy in working for what they felt was to be a valuable contribution to teaching-method.

Mr H. Boyes Watson, the Chief Education Officer, has kept in close contact with the details of the experiment at all stages. His support, encouragement, and advice have been greatly appreciated and have ensured the smooth working of a large co-operative effort.

Thanks are due to the Education Committee for their confidence in those undertaking the work. Many members frequently visited classes and watched the progress of

individual children, and the Committee as a whole has contributed much by its sympathetic and progressive attitude

Owing to the ambiguity attaching to the word 'retardation,' it is necessary to state that whenever the words 'retarded,' 'retardation,' or 'backward' are used they have reference to educational retardation when judged by the criterion of mental age. When it has been necessary to refer specifically to children who are unintelligent, the terms 'dull' or 'innately dull' have been used.

Acknowledgment must be made of the contributions of the following workers who have participated in the experiments described in the following pages: the members of the Southend Arithmetic Research Committees (*Senior Section* the Misses Cheyney and Macintosh, Messrs Haxell and Morris, *Junior Section* Miss Howe, Messrs Fortescue, Gibbs, and Pike, *Infant Section* the Misses Allard, Bill, Crane, Salmon, and Warman), Mr Holbrook and the staff of the Attendance Department for statistical assistance, Mr Blackwell for help in drafting the scholar's record-card and I Q. chart, and the Misses Crane, Salmon, Young, and Macintosh, and Mr Denny and Mr Southgate for original contributions to method.

Thanks are due also to Messrs Evans Brothers, Ltd, for their kind permission for the reproduction of drawings from *Art and Craft Education*

M E H

October 1939

## PREFACE TO THE SECOND EDITION

THE first edition of this work described a planned attempt to make provision in an urban area for the more backward pupils at all ages. During the ten years which have elapsed since its publication the outlook on selection and scholastic records has undergone a great change, and this suggested the need for a radical revision of the first three chapters. These have been rewritten in an endeavour to align them with the present outlook.

My grateful thanks are due now, not only to my old friends at Southend, but also to the teachers of Nottingham, Leicester, and Manchester for their co-operation in studies which have led to the added content of this volume

M E H





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## INTRODUCTION

ALTHOUGH the existence of the problems caused by educational retardation is well known in all areas where local authorities have reorganized their elementary schools, a restatement of the problem is necessary as a prelude to this account of an investigation into its nature and extent and of the subsequent steps which have been taken in attempting its solution

The grouping of a much larger number of children within a restricted age-range, and the classification of children according to ability in each chronological year of their school life, threw into high relief the fact that each of these groups, although of the same chronological age, comprised children whose scholastic attainment extended over a range of as much as five or six years. This did not appear to constitute a serious problem in the 'A' and 'B' streams, but it soon became apparent that the children in the 'C' streams were not responding to the accepted methods of class teaching. Very little scholastic progress was being made by these children, and, moreover, there was evidence that the inability to achieve was causing a problem of wider significance. Children who could not obtain satisfaction through their school work were directing their energies into other channels. More than 50 per cent of juvenile delinquents who came before the juvenile court were school misfits. Inside the school there was a distaste among the teaching staff for work with 'C' stream classes. A grave responsibility therefore devolved upon the Education Authority to tackle a problem which was not only of a serious educational nature but one which had a much wider social significance.

In the early stages of reorganization an attempt was made to formulate methods for the children of lower ability, on the generally accepted lines of giving them a modified curriculum in certain subjects and introducing a greater

proportion of practical work. Within a short time it was realized that these were amateurish attempts to deal with a situation which required a professional diagnosis. Those who were responsible felt like craftsmen attempting to work in a medium the composition of which they did not fully comprehend. They felt that a new technique had to be evolved if this medium was to be manipulated with success.

It was at this stage, in May 1936, that the Authority called into consultation the persons who were making a professional study of the problem of retardation.

The Central Association for Mental Welfare were asked as professional consultants to diagnose the retardation in all the schools of the County Borough, to make a comprehensive survey of its nature and extent, and, if possible, to make suggestions for its treatment.

### THE EDUCATIONAL SURVEY

Two educational psychologists spent three months in making a survey and at the end of that period submitted their report. For the purpose of this record it is necessary to give only some of the salient results and conclusions.

#### 1 THE MEASURE OF RETARDATION

In order to obtain the necessary data the heads of all types of schools co-operated in administering tests of scholastic attainment. In the infant schools the scholastic measure was taken of 1083 children of 7+ years of age who were about to be promoted to the junior departments. Similarly 1456 junior children of 11+ years of age who were about to be transferred to senior departments were tested, together with 360 seniors who were 14 years of age and about to leave school.

All of these children were given Burt's Reading Accuracy Test (Graded Vocabulary). The results are given in the following table, which shows the number of children who were normal in attainment, the number who were retarded

or advanced, and the measure of retardation or advancement in scholastic years. It should be remembered that the three groups of children represent cross-sections of the school population and not its entirety.

## RESULTS OF SCHOLASTIC TEST

## READING ACCURACY

Departments	Number of Children										
	Years Retarded					Normal Attain- ment	Years Advanced				
	5	4	3	2	1		1	2	3	4	5
Infants (aged 7 years)				35	123	365	250	157	87	41	25
Juniors (aged 11 years)	4	12	28	50	98	502	320	274	168		
Seniors (aged 14 years)		5	6	7	28	188	126				

If the above numbers are expressed as percentages of the totals we find the following result

## READING ACCURACY

	Retarded	Normal	Advanced
Infants	15	33	52
Juniors	13	34	53
Seniors	13	87	—

These figures were taken as a rough indication of the numbers for which a revised class-organization would be necessary. It was estimated that 10 to 15 per cent of the children in a reorganized school would be so retarded as to prevent them from benefiting appreciably when educated in a 'C' stream class.

## 2 THE CAUSES OF RETARDATION

(a) **Innate Dullness.** It was necessary to attempt to discover first the extent to which retardation was caused by innate dullness. The heads of schools were asked to submit particulars of the children in their departments whom they considered to be backward or difficult or both. Out of the 1278 children who were referred, a sample of 270 children with an age-range of 7 to 14 years was selected for individual examination and for a more intensive study. Each of these 270 children was given an individual intelligence test by the psychologists, Burt's Revision of the Binet scale being used for the purpose. Their scholastic measure was based on Burt's Reading Accuracy Test. A comparison of the results obtained by these tests was made to determine how far the children's retardation was due to innate dullness.

The table opposite summarizes the results and shows the percentages of the retarded children falling in successive intelligence groups. The figures in brackets show the average scholastic retardation in years of each of the groups when measured from mental age.

It is interesting to note that quite a considerable percentage—as high as 25 per cent in the case of the seniors—were found, by this particular test, not to be retarded at all when due regard was paid to mental capacity. Most of these children had I.Q.'s below 90. The fact that they appeared on the list of problem children compiled by the teachers indicates that the teacher may have been unaware that they were working up to capacity. If the teacher has reassurance on good authority that such a child's attainment, even if

poor, is *adequate*, a vitally important step has been taken psychologically in treating the difficulty. A very important part of a psychologist's service to 'backward' children is to diagnose in such a way as to make this evident.

The table is outlined in black to show the two regions of retardation in this sample of children

(1) *The right-hand section*, where the children are of average or superior intelligence. This includes 39 per cent of the total and is comprised, mainly, of infant and junior children

BORDER-LINE DEFECTIVE ← ——— AVERAGE ——— → SUPERIOR

DEPARTMENTS	INTELLIGENCE QUOTIENTS						NOT RETARDED
	Below 70 +	71-80	81-90	91-100	101-110	111-120	
Infants (77 cases)	4	6	20 (1 5)	26 (1 5)	16 (2 5)	12 (2 5)	16
Juniors (126 cases)	2	16 (2 5)	20 (2 2)	24 (2 5)	18 (2 5)	—	20
Seniors (67 cases)	15 (2 2)	20 (2 9)	27 (2 0)	13 (2 6)			25

To summarize 54 per cent of the infants, 42 per cent of the juniors, and 13 per cent of the seniors, who were individually examined, are of average or superior intelligence, but their scholastic attainment is more than two years behind their mental capacity. This very clearly suggests that most of the more intelligent children tend to make up lost ground in the junior department. Where such high percentages as 58 and 42 of the backward children fall into intelligence-groups above 90 there are extremely good prospects for remedial treatment. It would seem apparent, too, that the 13 per cent of the seniors, although only of average intelligence, should respond readily to treatment.

(2) *The rectangle*, on the left, suggests where the main block of difficulty lies in the senior school. Thirty-five per cent. of



these, with average retardation 2.3 years below normal mental age, range from border-line defectives to those of dull intelligence. It will be remembered that a further 25 per cent of the seniors came within these intelligence limits but were not retarded for their mental age.

The portion of the table above this rectangle shows the existence of the same problem and its extent in the infant and junior schools—that is, 30 and 38 per cent. respectively of those individually examined.

(b) Causes of Retardation other than Innate Dullness. The causes other than innate dullness are usually complex. A scrutiny of a large number of cases indicated that the following were the circumstances which were most usually operating

(i) Change of School. The migration of children is a special difficulty in Southend. In certain schools as many as 30 per cent. of the children change their school during the course of a year. Although school record-cards were in operation, it was apparent that a reliable measure of each child's attainment should be made available in order that there should be no loss of time in comprehending a particular child's needs.

(ii) Transfer from One Department to Another. This absence of a measure of attainment and ability is similarly a drawback when a child is promoted from an infant to a junior and thence to a senior department. Without a reliable measure of what to expect from a child of a certain age, and of the child's actual attainment by comparison therewith, much valuable time may be lost in allocating children to their appropriate classes, since there may be as many as 150 admissions at the beginning of the school year.

It is the transfer from infant to junior departments where this is particularly important, for quite a large percentage of intelligent children experience periods of maladjustment and illness before the seventh year, which cause them to be marked down as of third-rate ability.

(iii) Teaching-method. The retarded child needs a special

technique in order to elicit spontaneously from him the response of which he is capable.

(iv) *Differing Degrees of Retardation in One Age-group.* The range of retardation for all children of one age-group is at least one to four years. Thus the retarded children of the 11-year junior group may require to begin their period of recovery at any point from the work of the infant school upward

### 3 THE LINES UPON WHICH A SOLUTION OF THE PROBLEM MIGHT BE EFFECTED

The recommendations in the words of the psychologists were as follows

(i) That at least one teacher in each department, selected for her suitability, should work in co-operation with some recognized and qualified expert and if possible take some course of training in mental and scholastic diagnosis for the purpose of discovering, where necessary, the extent and causes of retardation

(ii) That scholastic tests of the type used in making the educational survey be used as a means of objective assessment rather than the subjectively determined rating of a child as *A*, *B*, *C*, or *D*. These tests will place a child in his scholastic year group and thus indicate the work he needs

(iii) That an effort be made to evolve a system of individual work which will range from the beginning of reading and number to the twelfth year of attainment, so that it will provide a progressive system of work for any child at any level of attainment. In the junior school this will not only help the dull, backward child to catch up to the level of his innate ability, but will also allow of a more speedy recovery for the intelligent child who has become inadvertently retarded owing to the vagaries of health and adjustment in the infant years.

(iv) That the individual scheme in reading and number

shall form the basis for the schemes of work for small tutorial classes accommodating no more than thirty children. The statistical findings would seem to point to the need for one such class per department. The remainder of the curriculum can centre round project work of a collective nature, incorporating such geography, history, hygiene, etc., as will be useful in adult life rather than the kind of information which is of more strictly scientific interest. The more intelligent admissions to this class should be transferred back to the normal streams as soon as they have caught up to the normal level for their mental age. There will be a small number who will be retained in this class because their extreme dullness unfits them for the ordinary class régime.

### STEPS TOWARDS A SOLUTION

The report on the survey was most carefully considered by the Authority. It was recognized that the findings of the report were of profound significance and revealed the existence of a problem which could not be overlooked, and which would demand special efforts for its solution. Moreover, it was clear that the necessary steps towards a solution could not be taken except under the continued guidance of those who had made a study of educational psychology. Accordingly an educational psychologist was appointed to lead a co-operative effort to evolve new methods.

#### 1. EXPERIMENTAL SPECIAL CLASSES

In the first few months experimental special classes were established in four schools and worked under the direct supervision of the educational psychologist. These classes were in a senior girls', a senior boys', a junior mixed, and an infant department, and in each of the classes there were not more than thirty children on the roll. In the first instance attention was concentrated on drawing up a graded scheme of individual work in English to cover the scholastic age-

range of the class, so that each child could work at his own level and all could progress at their respective rates. In the first few months it was possible to make only a preliminary approach to the organized teaching of number, but the necessity for such a scheme and also the dimensions of the task were made clear.

After these experimental classes had been in operation for a period of about six months, the situation was reviewed in order that it might be explored how far and with what modifications the methods which were being formulated could be extended and developed to cover the whole of the 10-15 per cent. of the school population for whom the ordinary class-room methods were considered to be inadequate.

## 2 THE TEACHING STAFF

One of the first points to be realized was the need for more instruction of the teachers both in the kind of methods suitable for backward children and also in the technique of mental testing. This aspect of the matter is one which should be the serious concern of the training colleges, although any considerable degree of understanding of the problems of retardation cannot be expected until a teacher has had a large measure of actual teaching-experience. For this reason we have found it inadvisable to put newly appointed teachers in charge of special classes. The number of teachers with adequate knowledge of mental testing and educational psychology was not sufficient to make possible immediately the establishment of a comprehensive system of special classes which would have the necessary degree of continuity of method as children passed from one department to another. To meet this need a series of general lectures was given by the educational psychologist, separate meetings being held for senior, junior, and infant teachers. These were followed by group discussions. In addition, at least one assistant in each department was encouraged to make a more detailed study of mental testing and the

problems connected with retardation at courses arranged by the National Association for Mental Health and the Ministry of Education

When more classes were established the psychologist spent a considerable time actually in the class-room, working out with the teachers the syllabus and methods for particular classes. She also gave individual supervision and advice to teachers engaged on mental testing. As a consequence the teaching of retarded children is now regarded as being a specialist subject and receives due recognition from the Authority. When a teacher is considered by the psychologist to have reached a stage when he or she is regarded as competent to give individual intelligence tests and assess I Q.'s by this means, a certificate of proficiency is granted.

### 3 EXTENSION OF THE SPECIAL CLASSES

It was next considered whether and in what manner the system of special classes could be extended to cover the whole of the schools of the Borough. It was clear that in some schools difficulties of accommodation and buildings would not permit an alteration of class-organization, but in so far as these circumstances permitted it was decided to organize the work with retarded children in the respective types of schools on the following lines:

**Infant Schools.** A specially 'selected' class was formed in each department where accommodation permitted.

**Junior Schools.** The type of special class in the junior departments has varied in accordance with the size of the schools. When the school is large enough to permit of three-stream classification, it has been found advisable to deal with retarded children in the smaller 'C' streams: the number on roll in these classes was limited from thirty to thirty-five. If the department was only large enough for two-stream classification, one special 'selected' class (or two in certain cases) was allowed. Our experience so far has indicated that by this means, during the transitional stage of the junior

school, the children of better intelligence will catch up to their normal standard of scholastic achievement.

**Secondary Senior Schools.** At the end of the junior school course there appeared to be left a residue of children who were unable to take their place in the normal senior school streams. Accordingly, one special selective class was formed in each secondary department.

#### 4 UNIFORMITY OF DIAGNOSIS AND KEEPING OF RECORDS

In order to minimize the loss of progress when children pass to new teachers it was decided to keep all scholastic records in terms of standardized measures which could be understood more accurately and quickly than subjectively determined ratings such as *A, B, C*, or *Good, Poor*, etc. This organization and the type of record is described later.

#### 5 TEACHING METHODS

It may appear to be an unnecessarily obvious statement to say that diagnosis is of little avail without treatment, but the realization of the significance of it is fundamental in dealing with retarded children. Scholastic testing is being increasingly adopted by education authorities in various connexions, but the full value of the results of the tests can be obtained only by the ascertainment of the correct form of treatment which will meet the type of case revealed by the diagnosis.

In this introduction I have attempted to indicate the framework within which the formulation of improved methods has proceeded. In the chapters which follow the educational psychologist will describe details of organization and method which have been evolved during the three years' experimentation.

H B W.

## CHAPTER I

# A PSYCHOLOGICAL BASIS FOR METHODS WITH BACKWARD CHILDREN

### INTELLIGENCE AND INTELLIGENCE QUOTIENTS

SURVEYS of the kind recorded in the introduction have revealed that in the majority of cases an educationally retarded child is of dull intelligence. However, the proportion of retarded children who are not dull is by no means negligible, for there are other causes, sometimes more potent than poor intelligence, that give rise to scholastic failure. ✓

This is most evident in infant schools. At this level it is probable that the backward children can be divided into two groups, approximately equal in size, the one being dull and the other not. However, in the adolescent years only about a third of the children who are backward may be of normal intelligence. This suggests that many children of average intelligence experience temporary difficulties which, by the age of thirteen years, they overcome sufficiently to be regarded as normal in attainment. This does not mean that the discrepancy between capacity and attainment has been removed entirely, for intelligence test results for 'C' stream classes reveal the presence of potentially 'A' children among the best third. Thus, whereas there is little overlap in attainment between the pupils in the three streams in scholastic ability, there is a considerable amount of overlap when capacity is considered.

This differentiation of poor scholars into two classes by means of measurements of intelligence raises certain issues of fundamental importance, particularly in connexion with the reliability of the I Q, as a predictive criterion. In the early days of group-intelligence testing there was a tendency

to accept the results uncritically as predictive of the child's capacity to learn. However, it became apparent as discrepancies multiplied that the I Q could prophesy falsely. Sometimes children with low I Q 's were known to be quick developers, and sometimes children with high I Q 's were found who appeared only capable of slow advance. Thereupon the interest shifted from the constancy of the I Q as a predictive measure to the problem of its reliability. Many researches were conducted into factors which could bring about an increase or decrease in I Q,<sup>1</sup> and some of these are of particular interest to the teacher. For instance, it was found that when children are removed from an unsatisfactory home environment and placed with good foster-parents the I Q tends to rise. Also, children who have been treated for emotional maladjustment show marked increase in I Q. This suggests that, although the children had been of normal capacity or even superior capacity when they were unfortunately situated, they had not been able to exercise it fully. Later, when released from circumstantial and psychological anxiety, their test performance revealed their true capacity.

However, apart from changes brought about by environmental influence, there are some general trends which cause a rise or fall in I Q. For example, the I Q 's of dull children tend to become lower with age, while those of the bright tend to increase. A careful research conducted in Australia<sup>2</sup> into the changes of I Q among dull children showed that as they became older their I.Q.'s tended to decline, and that this was so, though to a less degree, if an effort were made to improve environmental conditions. This means that an I Q of 75 at the age of 8 years may have become 65 by the age of 14 years. This does not necessarily mean that the pupil is relatively less able to carry out practical tasks, but rather that he may have fallen behind still more in his capacity to manipulate words, for the test was largely verbal.

<sup>1</sup> Vide H. McRae in *British Journal of Educational Psychology*, vol. xii, pt. 1, p. 42.

<sup>2</sup> Vide G. E. Phillips, *The Constancy of the Intelligence Quotient in Subnormal Children*.



in character. It is well known that the kind of intelligence test used has a determining influence upon the resultant I.Q.

The work of Duncan brings this point out most clearly.<sup>1</sup> He found that the I.Q.'s of many of his children were higher when they were measured by a non-verbal test. They had been sent to his school as mentally handicapped children with an I.Q. derived from the Terman-Merrill Stanford Revision of the Binet Scale. Yet when he administered the Progressive Matrices test he found a much better distribution of intelligence among his pupils, and the success of his visual and practical methods of education revealed that verbal capacity and intelligence are not identical—a fact which many researches have confirmed.

Considerable statistical evidence nevertheless exists to show that for the vast majority of children the I.Q. fluctuates very little, and that it is a reliable predictive measure, at least over a period of two or three years. It is among the odd 10 per cent that the aberrations occur. As a single measure, taken alone, the intelligence test gives the most reliable forecast of scholastic success, but vigilance should be exercised in observing evidence of its unreliability in the case of individual pupils.

One obvious way in which an I.Q. can appear to be unreliable is when it under-assesses a pupil's capacity. In this case the attainment levels will be considerably superior to the intelligence test result, and such a situation is readily explained. It may mean that during the testing period the pupil did not exert himself to do as well as possible. It is to avoid this possibility that a group-intelligence test should be carried out by some one who can stimulate the pupils to do their best. This is particularly important when the test is broken up into a number of timed intervals.

The danger of underestimation of intelligence is considerably reduced by practice. If the children are familiar with the way the test items are presented, they get off the mark, so to speak, with greater self-confidence.

<sup>1</sup> J. Duncan, *Education of the Ordinary Child* (Nelson).

There was a time some years back when one half of the teaching profession laughed at the other for trying to improve their pupils' intelligence by giving them practice in working intelligence tests. This diversity of opinion was brought about by the failure to distinguish between the theoretical assumptions concerning intelligence and the art of intelligence testing. In other words, what is theoretically called the child's intelligence may not be improved by practice, but intelligent action in a test situation can be improved by familiarity. If the pupil wonders for too long what is required of him, time is lost before fluent thinking begins. Good tests, of course, endeavour to safeguard against this by a period of practice before beginning the test proper, thus ensuring a confident approach. It seems, therefore, that the administration of intelligence tests should begin at about 7 to 8 years of age, so that they represent familiar situations by the time such tests are needed for predictive purposes at the end of the junior school course. These precautions will progressively increase the reliability of the test result. This does not call for intensive practice. One test could be given between the ages of  $7\frac{1}{2}$  and  $8\frac{1}{2}$  years, the next before the age of  $9\frac{1}{2}$  years, and thereafter at half-yearly intervals.

Sometimes an I.Q. appears to be unreliable in another sense because it is so much higher than the child's performance would lead one to expect. It may be observed that other pupils in the class who are much more able scholastically have lower I.Q.'s than this particular child. This eventuality should be regarded as a pleasant surprise, and should not be met with too much scepticism, for, providing there has been no opportunity for the child to overlook the paper of a more able pupil, the result must be taken as a genuine measure of his intelligence. Moreover, the cause of scholastic failure must not be regarded as dependent upon poor intelligence, for, if the test measures intelligence validly, his capacity to learn is greater than his actual achievement. This consideration leads to an examination of the reasons for backwardness other than poor intelligence.

Sometimes an intelligence test of the non-verbal variety is given to a backward child and the result suggests his intelligence is above average. However, it is difficult for his teacher to believe that this result is reliable, because his performance in school suggests he is very dull and stupid. A particular example of such a boy is that of George, 13 years of age. In the course of a survey of intelligence and scholastic ability held in his school he achieved an I.Q. of 110 on a non-verbal test of mental ability. He was top of his group in the performance tests of intelligence. These results surprised his teacher and headmaster, for, as they remarked, "they had found no good in him yet." The explanation for this adverse opinion was to be found in the boy's reading ability. His reading accuracy age was 7.5 years and his reading comprehension age 9 years. In handicrafts, however, he was reported to be making surprising progress. It is clear that his intelligence was above average, but, as he had failed to learn to read, he could not employ his intelligence in a verbal medium and so was at a disadvantage in almost every subject. Evidence of his intelligence is seen in the good use he could make of what few words he could read, for he had guessed successfully at the meaning of some of the words he did not recognize in the test of reading comprehension. This accounted for the fact that his age for reading comprehension was above that for reading accuracy. As no words were required for the non-verbal intelligence test and the performance tests of intelligence, he could exercise his capacity to the full. Of this boy it is more true to say that he has a good average intelligence and a verbal disability than to say that he has a special ability for handicrafts. It is his inability to read which calls for remedy, and this should have received attention six years earlier.

The next question which arises from a consideration of these facts is that of the reasons for George's failure to learn, though he was of normal intelligence. It is helpful to regard the reasons as of two kinds: firstly, reasons both psychological and physiological which are inherent in the pupil's

constitution, secondly, environmental reasons, or the lack of opportunities provided for the overcoming of remediable handicaps

In George's case there were both environmental and constitutional reasons for his failure to learn to read. In the first place, the school environment could not adapt itself to George's needs because his teachers always had too many more able pupils requiring their attention, to give much time to him. His school had only one stream, and there was no small 'opportunity class,' where he could receive attention in a group of boys labouring under similar difficulties. After leaving the infant department it is unlikely that he even had a book suited to his level of reading. Thus for him the educational environment was ill-adapted.

The constitutional reasons, however, call for more detailed description. In the first place, he had a predisposition to fixate his eyes first to the right, with a subsequent adjustment leftward. It is obvious that this would not augur well for progress in reading, for in this activity ability to phrase with eye movements from left to right, with as few fixation points as possible, is of vital importance to progress. George's tendency to make right-left eye movements is found among a large percentage of backward readers. It is known by the term 'left ocular dominance.'<sup>1</sup> Sometimes good readers are found to have this characteristic visual tendency, but the proportion among backward readers is much higher. The majority of people are dominant in the right eye, and it is probably for this reason that the convention of reading requires a left-right movement of the eyes. Were the majority of people dominant in the left eye, it is possible that

<sup>1</sup> To test ocular dominance use a sheet of foolscap paper with a hole the size of the end of a pencil in the centre. Demonstrate by holding the paper at the two bottom corners and bring the paper up to the bridge of the nose, saying, "I can look at you through this hole. Now you look at me in the same way." The pupil usually places the hole opposite his dominant eye. Another method is to scratch a circle the size of a sixpence on a mirror and ask the pupil to see if he can get the tip of his nose in the circle. He will close his non-dominant eye.

reading would have evolved as a movement along the lines from the right to the left. The reason for this is simply that the eyes converge inward on a common field and the dominant eye focuses first. If it is the left eye which is leading, it looks in a direction to the right of the visual field then moves leftward slightly to adjust to the vision of the right. Thus a right-left movement is initiated in the perceptual act. Normally this unfortunate tendency is replaced by a new habit as the child adjusts to the requirements of the reading situation. If he experiences any difficulty, it is usually short-lived. George, however, was not able to establish this habit of fluent eye movement from left to right, and this was due to the second constitutional reason for his failure. It is well known that fluency is reduced by depressive emotions and by the jerky mental surging which accompanies anxiety conditions. George was one of those quiet boys with little spontaneity, either socially or in application to his work. He did not find it difficult to daydream soporifically when, as was often the case, the classwork was beyond his comprehension. Thus a primary tendency to inertia mounted to larger dimensions, and the rapid scansion from left to right, with few and appropriate fixation points, was not achieved. Moreover, he was trained to read by a method largely phonic, and this analytic approach to word recognition was no aid to a rapid perception of whole words and phrases. In fact, on his worst days, when he was more blocked than usual, it was possible to detect his right-left attack on words by asking him unexpectedly to spell a certain word. Sometimes the incipient voicing of the last consonant was unmistakable. Thus, because of his lack of fluency, he was unable to reverse the natural tendency in adapting himself to the reading situation.

Some evidence of the prevalence of this handicap was given when the writer examined the ocular dominance of the two most backward readers in each year-group of a boys' school with an age-range from 7 to 14 years. Of these sixteen boys thirteen were dominant in the left eye. Miss MacMecken's

findings<sup>1</sup> support this view, and it is clear that no teacher who is unacquainted with the nature of this drawback to normal scansion in reading is equipped to help non-readers.<sup>2</sup>

At the opposite extreme of this inertia is the distractibility of children whose attention wanders agitatedly from one object and activity to another. In their case reading progress is frequently slow, but provided they are of normal intelligence they usually achieve an established reading-age by the time the secondary modern school is reached. They are throughout their schooldays spasmodic in standards of accuracy, because their effort is charged by fitful emotional energy. Their manifest achievement is a reflection of their poorly integrated personalities, and inconsistency in spelling and arithmetic and unevenness in writing are due to the attenuated attention and uneven concentration of the mind which is neurotically disposed. To adopt a disciplinary attitude to their errors is of little value. They need appreciation and reassurance in failure if their condition is not to be aggravated. However, because their mental operations are fluent rather than inhibited, they are at less disadvantage in learning to read.

### REMEDIAL APPROACHES

The gist of the previous paragraphs can be expressed in one sentence namely, that ultimately failure to learn is due to inadequate attentional habits. This is a commonplace of educational theory, and remedial measures must aim at establishing better and more alert powers of attention in pupils particularly handicapped in this respect.

It is very helpful if exercises to encourage alertness and accuracy of observation are carried out for short periods each day with children whose attentional powers are weak. The exercises should be of the kind which call for responses

<sup>1</sup> Vide *Ocular Dominance in Relation to Developmental Aphasia*

<sup>2</sup> Should the reader's interest demand more information as to the nature of left ocular dominance they can find valuable discussions of the problem in the writings of Burt and Schonell (see Bibliography)

in a reading situation. For instance, Kim's game stimulates the capacity for alert observation, but it would do little to inculcate new habits in reading. However, if it is desired to practise some words and phrases which have appeared in the reader, sketches indicating the meaning of the words can be prepared on one set of cards and the words and phrases to be paired with them printed large on another set of cards. This apparatus could then be used as follows. First an illustration can be shown silently and its counterpart in words shown at the same time. The class can then say aloud the phrase or word which has been shown. Thus meaning precedes the experience of the printed word. This could be repeated for two more pairs of cards. Then, as a next step, a team race or competition between pairs of pupils can be arranged to pick out the correct phrase from among three to match a picture exposed for no longer than one or two seconds. Marks can be given for speed and accuracy of recognition and selection. This process can be reversed and the picture found from among the three illustrations to match a selected phrase. Finally, the words can be exposed for three seconds and the pupils asked to write each from memory immediately after the exposure. Three exposures of each word usually suffice for correct reproduction. This lesson should end with an examination of the practised words in their reading context, either by reading the pages containing them aloud, or by a sentence-completion exercise, taking care throughout to confine the vocabulary used to that of the book.

It must be remembered that the direct value of this flash-card technique lies in the habit of alertness in perceiving wholes which it engenders. It matters less that the next day the spelling of the words is forgotten. Its chief value lies in inculcating a new visual habit.

Another, even more important, consideration is the difficulty of ensuring that the printed words will become associated with memories or ideas in the minds of the pupils. This aspect of the reading process has been discussed more

fully elsewhere<sup>1</sup> in so far as it applies to young children. However, the association between symbol and thought content is a very important element in teaching-technique at every stage. Whether it is number or reading which is in question, the same rule applies. There is, however, an interesting difference in the complexity of association between meaning and symbol in the two subjects. In number the quantities are first presented in concrete form, with some activity in relation to them. After this the symbol is associated with the impressions thus aroused. That is to say, a digit or multiplication table is introduced to the child after some real experience has taken place with beads, say, or counters or play materials. This experience is simple and concretely self-evident. It is quickly assimilated.

In reading, however, the learning situation is more complex. The experience which underlies the average word is, at the age of 6, a complex accretion of associations which will differ markedly from child to child. Some of these associations will be emotional and thus composed of images of varying degrees of intensity. They will constitute the matrix, as it were, to which new experiences of words will attach themselves. Sometimes, however, there is a lack of a well co-ordinated and lively responsiveness in these associations. These memories may be quiescent beneath a pall of apathy or shut down beneath the dominating power of resentful preoccupation, and in this event the new word or phrase will have no mnemonic anchorage and it is forgotten almost immediately. "In one ear and out the other" could be interpreted frequently as failure to remember because poor attention prevented the rise of too few mental associations. It is, therefore, important that the teaching of reading to backward children should involve a study of the methods whereby lively meaning-associations can be aroused in the children's minds in relation to the words or phrases to be learned. An attempt has been made to discuss this problem in a practical way in Chapter V, and

<sup>1</sup> M. E. Highfield, *The Young School Failure* (Oliver and Boyd)



elsewhere,<sup>1</sup> and to demonstrate that skill in teaching is primarily dependent upon evoking ready memory-associations when presenting fresh information which is to be memorized.

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## CHAPTER 11

### A SYSTEM OF TESTING AND RECORDING

THE time which can be devoted to the testing and recording of pupils' capacities, abilities, and other characteristics is limited by the number of children for whom records must be kept. Thus in the interests of economy it is necessary to restrict assessments and testing to those aspects which are relevant and which can be reliably assessed.

Unfortunately some of the aspects which are relevant cannot at present be assessed with reliability. For instance, it is of great importance to understand the interests of children, for education through the child's spontaneous interest produces the most successful results.

The recording of children's interests would appear to be therefore a very relevant entry on scholars' record cards. However, when the practical problem of recording interests is considered, it is found firstly that chance circumstance, which is changing continually, determines many interests, and, secondly, that few interests are maintained for long periods until maturity is reached. In consequence a record of present interests will probably be very much out of date in a few months.

Moreover, it is difficult to observe directly the spontaneous interests of children, and when they themselves are asked to say what their interests are they frequently do not select those which are the most important to them. Some of the interests which are of real importance will seem to them too silly and trivial to report on to adults. Thus, although an observation and knowledge of types of interest is desirable, this is not an aspect which can be reliably recorded as a matter of routine. If it is desired to inquire into children's interests, it would seem to be a problem

which should be investigated by means of a specially designed research

Another debatable question is whether any topic which cannot be tested objectively or which cannot be observed easily by teachers in the course of their daily routine is unsuitable for inclusion in a system of recording because of the difficulty of obtaining opinions which are self-consistent. All types of social characteristics, apart from those arising out of the teacher-child relationship, are assessed with a low reliability in most school environments, because of the lack of opportunity for the teacher to observe this trend of behaviour. However, there is no doubt that, with smaller classes and greater freedom for the pupils to communicate with one another, the assessments of teachers on this topic would attain a higher standard of reliability.

It has been found that experienced teachers show a very high degree of self-consistency in assessing 'work-related' attitudes, the reliability coefficient may be +0.95 and over. When the same teachers re-assess social characteristics after an interval of two weeks, correlation coefficients between the two assessments are from +0.7 to +0.8. There is, of course, very little value in assessing characteristics unreliably, and in reducing the labour of recording to a minimum it is desirable to omit all aspects which have low reliability.

Prior to the Education Act of 1944 there was a tendency in some areas to keep records with a view to ascertaining pupils' weak points. The interest which was centred on delinquency and backwardness a decade ago inevitably gave rise to this bias. Now the emphasis has shifted, and attention is focused on how to select the normal and the superior for suitable forms of secondary education. But both the backward and the advanced must be 'selected' for secondary education, and it is therefore necessary to ensure that any systematic recording during the primary school years and after shall serve both these purposes. In secondary schools recording will be made also with a view to selecting children for different types of prevocational education. For the

backward child, who should at least leave school with literacy established (that is, provided the I Q is no lower than 65 and that there are no other major handicaps), prevocational training will consist for the most part of learning to read, write, and compute. His curriculum will include the teaching of various manual skills and some exercises in practical planning, as well as a simple cultural background of integrated information. However, the most important and urgent problem for older backward children is to ensure that scholastic ages of 9 to 10 years are reached in reading and arithmetic by the time the school-leaving age is reached. This level of attainment will ensure that illiteracy will not result when the classroom stimulus to reading is no longer present. A reading age of 9 to 10 years is sufficient for an adolescent to read the newspaper with ease, and to read most notices, placards, and advertisements without hesitation and strain. Thus reading activity which is established at this level will be exercised constantly because of the literature at which the individual is compelled to gaze. Advertisements and notices in public places alone will give practice.

For the backward, then, it is important to record accurately the reading and arithmetic ages. The value of the measures will depend upon the kind of test used, for this will determine its significance as a practical guide. In reading the most valuable kind of test is one graded from words of simple phonic structure which occur with the greatest frequency in reading matter to more complex phonic combinations which occur more rarely in printed matter. The Burt (Rearranged) Word Reading Test or Burt's Reading Accuracy Test, No. 1, is excellent for this purpose. If this test is used, a word of warning is necessary concerning the calculation of the reading age. When Burt first furnished norms for this test it was the fashion to begin formal instruction in the teaching of reading at the age of 4 years. In consequence, between this age and that of 8 years forty words are included—ten words per year. Thus it is necessary to give each child a basic age of 4 years and to add to it one year for

every ten words read correctly—each word counting as a tenth of a year. If, for English children, the suggestion<sup>1</sup> that a basic age of 5 years be adopted, teachers will find that at 8 years the average reading age of their class may be 9 years. Recently 172 children of 8 years of age, selected from fourteen schools because their birthdays fell between certain dates, were given The Burt (Rearranged) Word Reading Test (that is, Vernon's rearrangement for Scottish children), and the average score was forty-three words. If a basic age of 4 years is adopted the average reading age of this group is 8.3 years. If a basic age of 5 is used then the average reading age will be a year in advance of the chronological age of the group—that is, 9.3 years.<sup>2</sup>

All reading ages referred to in this book are those derived from either The Burt (Rearranged) Word Reading Test, or the test in its original form, *Mental and Scholastic Tests, No. 1*, but in both cases a basic age of 4 is adopted. This means that the reading ages of 4 to 8 are compacted into the chronological ages of 5 to 8. Other tests of reading accuracy with a graded vocabulary are Watts's Holborn Reading Scale and Schonell's Graded Word Reading Test. Schonell's test will be of greater value when associated with his '*Happy Venture*' Readers. In this test the criterion of selection has been the order in which words are introduced into the modern primer, and will to a certain extent depend upon the primers used. For older backward children it would appear to be desirable to have a test with a vocabulary selected on a more general basis, regardless of the content of primers, and Burt's test is excellent in this respect.

For younger children who are using infant primers Schonell's test would be more closely related to the method of teaching. It is important, however, that all schools in an area should use tests which have the same significance, and a general agreement should be sought on which tests to use.

<sup>1</sup> Vide P. E. Vernon, *The Standardization of a Graded Word Reading Test* (U.L.P.).

<sup>2</sup> Miss Dorothy Hammond found this to be so for the children of the County Borough of Brighton. See *The Times Educational Supplement*, August 1947. Her results were calculated from a basic age of 4 years.

The drawback to the use of these oral tests of reading accuracy is that they must be administered individually, but demand on time and energy is considerably lessened if a group test is used first to differentiate the normal from the backward readers. The writer has found that with younger children in the first year of the primary junior department a graded spelling test is a better sorting technique than a group test of reading comprehension. Burt's Graded Spelling Test, No. 6, distinguishes very well between the able and the poor readers at 8 years of age. This could be administered to the class as a whole and the individual reading test given only to those who have very low spelling ages, beginning with the poorest result and continuing up the list till a reading age of approximately 7 years is reached. The better children will not need a test of reading, for if they can spell they can read. It does not follow, however, that a child who cannot spell cannot read, and among the poor spellers will be some fairly able readers.

Later, during the last eighteen months of the junior school course, and during the secondary school years, it will be found that a group test of reading comprehension is quite satisfactory as a first method of selection. Ballard's Silent Reading Test, No. 1,<sup>1</sup> is excellent as a group test which will select effectively the able readers and throw into relief the poor readers who will need the more accurate measure afforded by a graded test of reading accuracy.

The testing of arithmetic is a simpler problem, because a group test can be given to all children of 7 or more years of age. It is usually sufficient to give backward children a graded test of mechanical arithmetic in order to decide the stage in the curriculum which the child has passed successfully, but, of course, to make a finer distinction between the more able pupils it is advisable to give also a test of arithmetic problems. In the primary junior school such a test is

<sup>1</sup> For instructions and norms see "Silent Reading Test (B)," in *The New Examiner* (U L P). Leaflets for the children's use can be obtained separately. They are not written on and can be used until worn out.

provided by Schonell's Essential Arithmetic Tests. There are two tests (Forms A and B) of mechanical arithmetic, and two of problem arithmetic. These are particularly useful between the ages of  $9\frac{1}{2}$  to 11 years, for the fact that they are timed increases the distinction between pupils of varying abilities, which should be an aid to selection at 11+. Prior to  $9\frac{1}{2}$  years, and in the secondary modern schools, it is suggested that more detailed information can be derived from such a test as the Revised Southend Attainment Test in Mechanical Arithmetic, which has no time-limit. This includes more test items at the early stages and tests on the basis of the secondary school curriculum at the later stages. The arithmetic ages referred to in this book and elsewhere by the writer are those derived from this test.

It will be observed that the tests recommended for use with backward pupils range through the whole gamut of the various stages of attainment from the end of the second year of schooling to the scholastic ages of 15+ years. This enables cumulative recording to take place, and a child's progress can be observed by comparing his present scholastic age with that obtained at a previous testing. It is disheartening for teacher and pupil to know that a child's scholastic level is three years below the average for his age, but it is very encouraging to know that though still backward he has made a year's scholastic progress in six months and so is showing signs of reducing the gap between his potential and actual levels of attainment. A further advantage of this type of test is the way it is aligned with the various stages in the curriculum—that is to say, it indicates how much of the curriculum has been assimilated and what should be the next steps. Once this information is available in terms of arithmetic and reading ages it is possible to use these measures to group the children within classes, and, indeed, within the school if the classroom walls are not regarded as boundaries which cannot be overstepped. In one-stream junior schools in particular it is possible for an enterprising head teacher to follow the method of organization common

in the small rural schools, where, in the basic subjects, groups are not determined by chronological age but by scholastic age. It is significant that by the age of 14 years backwardness in small rural schools is usually confined to the grossly mentally handicapped. This is seldom true of the reorganized schools where promotion occurs year by year for all subjects according to chronological age, regardless of scholastic age. If these schools have no special class or classes organized to serve the needs of all children who are very backward educationally, the children find themselves in a most unfortunate scholastic environment and the chances are that not even all those who are of normal intelligence will become literate before leaving school.

It is suggested that the following amounts of retardation, based on a comparison of scholastic age with chronological age, could be regarded as the upper border-line, calling for special provision in addition to a 'C' stream

CHRONOLOGICAL AGE	7 years	11 years	13 years
SCHOLASTIC AGE	5 years	8 years	9 years
AMOUNT OF RETARDATION	2 years	3 years	4 years

As has already been suggested, the danger of illiteracy after leaving school is averted if a reading age of 10 years has been established. This would correspond to the former Standard IV level of pre-Hadow days, where many a backward child spent the last years of his school career. The educationists of those days aimed too at a 10-year level as a minimum standard for all but the mentally defective.

Scholars' record cards, then, should be so designed as to show mechanical attainment in reading and arithmetic cumulatively recorded and also measures of the intelligent use to which the bright can put these skills, as yielded by tests of reading comprehension and problem arithmetic.



The latter information can be used for allocating the more able to their appropriate secondary curricula. The former will demonstrate the need for the continuance of the primary curricula into the secondary departments for at least 10 to 15 per cent. of the school population.

It has been suggested, notably by W. P. Alexander,<sup>1</sup> that teachers' assessments of children's traits of personality can be used profitably for diagnostic and predictive purposes. There is no doubt that the full use of innate endowment (however limited this may be) is impossible without adequate endeavour and spontaneous alertness. These qualities can be discerned quite clearly after the age of 8 years, and for the children who are backward though of normal intelligence cumulative recording by successive teachers would demonstrate how far emotional handicaps were being annulled by the educational influence of the school. An inquiry was conducted by the author in the schools of Manchester into the traits of personality which were most associated with good or poor adjustment in school. At 11 years the most relevant traits among those tested were as follows:

**Self-confidence in Failure:** Is he/she despondent when he/she fails?

A	B	C	D	E
Purposeful at all times in spite of failure	Tries again with fair confidence of success	Usually tries again	Shows only mild disappointment or accepts with indifference	Very depressed and distressed or resentful

**Persistence of Effort:** Does he/she tire easily?

A	B	C	D	E
Sustained enthusiasm and unflagging application. High standards of work maintained throughout	Steady application with consistent standards of work	Applies himself but quality of work tends to lessen towards the end of the period—e.g., copying from the board	Only capable of spasmodic application. Must have little rests in between	Seems too listless and apathetic to do much

<sup>1</sup> Vide *British Journal of Educational Psychology*, vol. xvii, pt. 3, p. 47

**Concentration:** Is he/she easily distracted?

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
Is completely absorbed in the immediate task	Reluctant to leave a task to attend to another	Can switch attention with calm deliberation	Attention wanders when task is difficult for him	Attention wanders even when the rest of the class is engrossed

**Enterprise:** Does he/she show enterprise in overcoming difficulties which arise in ordinary school life?

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
Takes steps to avoid difficulties before they arise	Quick to see the essence of a problem, and planful in solving it	Copes satisfactorily with his own problems	Appeals to others for help when in difficulty	Waits helplessly for some one to get him out of his difficulty

These four trends of behaviour are closely related to success in school as measured by eight scholastic tests in English and arithmetic and three intelligence tests. They can be observed by teachers to a large extent independently of intelligence and scholastic ability.<sup>1</sup> Moreover, most teachers, considering their nature in the light of experience and educational theory, would tend to agree that they represent the aspects of classroom behaviour which are of vital importance to successful learning.

By the age of 13 years one more important trait has an added relevance in relation to achievement, and this is 'Attitude to Adult Authority'. At 11 years this is not so well-defined a characteristic, but by 13 years it is among the most relevant. The guide to assessment is as follows

**Attitude to Adult Authority:** How does he/she regard adult authority?

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
Can successfully assist or deputize for authority as monitor or prefect	Co-operates with alacrity and gives authority active support	Has a co-operative attitude towards adults in authority	Conforms with indifference and not in a spirit of co-operation	Obstinate or rebellious

<sup>1</sup> For those interested in factor analysis the contributions to the variance after rotation for three factors were (a) Verbal, 30.3 per cent (b) Personality, 39.7 per cent (c) Visuo-spatial, 30 per cent. The communal variance of these four traits in this battery of eleven tests and fifteen traits were 80, 77, 67, and 73 respectively. At 13 years of age 'Attitude to Adult Authority' had a communal variance of 73, at 11 years this was only 50.

It is obvious that if measures of these capacities can be assessed reliably by teachers who have known their children for at least a term they could be expressed in numerical terms, for each trait is explained in five descriptive categories ranging from very poor to very good

For the purpose of the factorial study from which these findings were drawn, three marks were allowed to each descriptive category, so that one could be added or subtracted to allow of a finer discrimination. For instance, an 'A' assessment would have 14 marks ascribed to it, while an 'A+' would be 15 marks or an 'A-' 13 marks. For the two worst categories, D and E, a minus sign was complementary, for it is better to have a weak degree of a poor quality. 'D-' would therefore receive 6 marks and 'D+' 4 marks, 'E-' 3 marks, and 'E+' 1 mark. The possible range of marks for the five categories can be expressed as follows

+	A	-	+	B	-	+	C	-	+	D	-	+	E	-
15	14	13	12	11	10	9	8	7	4	5	6	1	2	3

The instructions for making assessments in this way are simple. The method consists of assessing all the children in the class for one item at a time. When considering, say, 'Self-confidence' the teacher decides which of the five descriptions best characterizes each child's habitual behaviour and records the appropriate letter, giving a plus or minus sign should the description apply to a marked or lesser degree respectively. Only one description is chosen for each child from each set of five

This method at 11 years, if four items only were used, would give a possible range of marks from 60-4; at 13 years this would be increased by another item and would range from a possible 75-5

These marks could be used where there was doubt as to which of a number of border-line testees should be given priority for a vacancy in either a grammar school or a special class for backward children. Near the border-line, intelligence is not sufficiently advanced to enable a pupil to adjust well to the curriculum of the grammar school unless

industry and resourcefulness are well developed. Similarly, some slow developers make better progress because they apply themselves and manage to advance without the close attention given in a special class.

There remains to be considered the kind of intelligence test which can be used profitably with both the backward and the advanced children. Obviously, because of the prevalence of reading disability among the retarded children, the intelligence test should be of a non-verbal variety. Children of normal attainment can manage group verbal tests after their reading ability has reached that normal to a child of  $9\frac{1}{2}$  years<sup>1</sup>. These children can be expected to demonstrate the level of their intelligence in a verbal medium. However, even normal readers do not always do their best on a verbal test and sometimes show to better advantage on a non-verbal kind. In fact, in extreme cases, a child's I.Q. may be twenty points or more higher on a non-verbal intelligence test than on an oral verbal intelligence test which does not demand reading to any great extent. Accordingly it is advisable to test intelligence both verbally and non-verbally, verbal group tests being used only with children whose reading ages are  $9\frac{1}{2}$  years.

Suitable intelligence tests of the non-verbal type are:

AGE IN YEARS AND MONTHS	TEST	AUTHOR	PUBLISHER
7 0-7 11	<i>Junior School Grading Test</i>	Alexander, W. P.	U.L.P.
7 0-8 6	<i>Moray House Picture Test of Intelligence, No. 1</i>	Mellone, M. A.	U.L.P.
7 0-10 6	<i>Sleight Non-verbal Intelligence Test</i>	Sleight, G. F.	Harrap
10 0-12 11	<i>Jenkins's Non-verbal Test of Mental Ability</i> <sup>2</sup> (a second form of this is now published)	Jenkins, J. W.	National Foundation for Educational Research
11 0-16 0	<i>Progressive Matrices (1938)</i> <sup>3</sup>	Raven, J. C.	H. K. Lewis, Ltd.

<sup>1</sup> Vide M. Mellone in *British Journal of Educational Psychology*, vol. xii, pt. 2, p. 42

<sup>2</sup> Must be obtained for schools by the Local Education Authority

<sup>3</sup> Those readers who decide to use Progressive Matrices Test will need to

The result of the intelligence test is of value for two reasons. In the first place it provides the teacher with a mental age from which an I.Q. can be calculated, or vice versa. The I.Q. can be regarded as indicating the rate of mental development. For instance, an I.Q. of 75 means that the child appears to be developing at only 75 per cent of the rate of the average child, whereas an I.Q. of 125 suggests a rate of development 25 per cent quicker than the average. Two children with these I.Q.'s will tend to be approximately 25 per cent or more behind and in advance respectively of the stage of development reached by the majority of children of their age. However, it is important to remember that more than one I.Q. obtained on tests of comparable standardization are desirable, and that of these the highest should be regarded with the greatest respect.

The intelligence test result is also important not only for its predictive value—that is, in estimating the rate of development—but also because from it the child's mental age can be derived. The mental age indicates the level of the child's best possible performance, and is the true criterion by which backwardness should be judged. It is information which is of value in relation to the individual child, and apart from the mentally handicapped child with I.Q. below 65 it has little relevance to class and school organization, which should be based on scholastic age.

The I.Q. has, of course, predictive value in allocating children to appropriate types of secondary curriculum, but for the backward who are still struggling with the tools of learning such refinement of selection is less necessary. The important determinant in so far as the curriculum is concerned is the fact that possibly they cannot read nor carry out the four fundamental arithmetic processes with success.

know the I.Q. points which correspond with the percentile levels given by the author of the test. They are as follows: 95th percentile = I.Q. 125, 90th = I.Q. 116, 75th = 108, 50th = 100, 25th = 92, 10th = 84, 5th = 75. Any scores which are obtained between those given by the author of the test can be ascribed an I.Q. value by interpolation. It is possible to get a complete specimen set of the test from the publishers, which would be useful for testing individual children.

For backward children, then, four types of measure at the outset would seem to be desirable when a new class is formed

- 1 A graded test of reading accuracy
- 2 A graded test of mechanical arithmetic
- 3 A non-verbal test of intelligence.
- 4 An assessment of fitness of behaviour in the learning situation.

The testing and cumulative recording of the progress of backward children could begin reasonably at the commencement of the junior school, for it is at this stage that the innately dull (that is, I Q 65-70) are ready for a first approach to formal lessons in reading and number. Every child who is 8 years of age and whose reading ability is not yet 6 years is one for whom the four measures referred to above are important. For the remainder, they can pursue their way through the primary school curriculum, until at the age of  $9\frac{1}{2}$  to 10 years their relative capacities and abilities can be measured and assessed with the aid of group tests, in readiness for the allocation to appropriate secondary curriculum at the age of 11 years. The observant teacher will be able to place the children in the appropriate stream on their knowledge of relative achievement, although, even in drawing comparisons between children who are not backward, standardized tests are an aid to speed and efficiency.

### THE RECORD CARD

It is now generally recognized that systematic recording calls for a uniform method for all schools within an organized area. It is necessary to use the same tests and to enter the results in the same way. Moreover, it would also clarify such records if the scores for each test were adopted to fit the same scale. For instance, it is not easy to align and compare an I.Q. of 95 with a scholastic age of 10 years. The information as to whether the child is doing well is not immediately available, for either the I.Q. must be transformed

into a mental age, or the scholastic age must be expressed as an educational quotient, or E Q.

It would not be an insurmountable task for the schools in each area to adopt arbitrarily a scale of marks for each subject with a range of 5 to 95, a mean of 50, and a standard deviation of 15 points.<sup>1</sup> A child's English, arithmetic, intelligence, and personality scores would then be immediately comparable. In addition, they could be pictorially presented by means of a histogram for each year's testing, and also, because the marks would have the same mean and the same standard deviation, they could be added together into a total to which all were contributing in the same proportion.<sup>2</sup>

Examples of transmuting scales of marks from their original forms to the standard scale required is given below for Jenkins's Non-Verbal Test and the four-fold measure of personality.

The non-verbal test of intelligence has a mean standard score of 100 and a standard deviation, or 'sigma' of 15. To transpose this scale to the required one ranging from 5 to 95 (sigma 15) it would be necessary to plot on a graph three points and join them. The vertical axis of the graph would register a range of marks from 5 to 95 and the three points on this axis would fall opposite 5 (that is,  $-3$  sigma), 50 (that is, the mean), and 95 (that is,  $+3$  sigma). The horizontal axis of the graph would register a range of I Q.'s from 55 to 145, and the three points on this axis would fall opposite 55 (that is,  $-3$  sigma), 100 (that is, the mean), and 145 (that is,  $+3$  sigma). Then the line joining these three plotted points would indicate the mark on the arbitrary scale which would be equivalent to the I Q. obtained on the test. For example, a child with an I.Q. of

<sup>1</sup> For further explanation of this, see P. E. Vernon, *The Measurement of Abilities*, Chapter IV (U.L.P.).

<sup>2</sup> A publication by the National Union of Teachers—*Selecting Pupils for Secondary Education* (edited by E. Davies) (Evans)—mentions this point, but suggests a mean of 100. Whether the mean should be 100 or 50, however, can be decided according to taste, provided the mean and sigma remain the same for all marks to be compared.

130 (that is,  $100 + 2 \times 15$  (sigma)) would have an arbitrary score of 80 (that is,  $50 + 2 \times 15$  (sigma)) on the required scale

To consider the second example, suppose the scores for behaviour range from 5 to 75 and have a standard deviation of 15 points. The mean score is 40. Now with the arbitrary scale of 5 to 95 on the vertical axis and the true scale of 5 to 75 on the horizontal axis we can plot three points at 15, 5 (that is,  $-2\frac{1}{2}$  sigma on each axis respectively), 50, and 40 (mean for each scale), and 85, 75 (that is,  $+2\frac{1}{2}$  sigma on each axis respectively). The line connecting these three points will indicate the comparable scores for the two scales.

If a scheme of this kind is adopted and there is general agreement about the tests to be used the scholar's record card could become an effective instrument for the grading of children for secondary education.

As an example, let us consider the scores of George, the boy whose difficulties were mentioned at p. 26. When transmuted to the arbitrary scale of 5 to 95 with an average of 50 marks, or an average of 100 marks, sigma being 15 marks in both cases, they are as follows

Subject	Score	
	Average 50	Average 100
<i>English</i>		
Reading Accuracy	35 (50-15)	85 (100-15)
Reading Comprehension	40 (50-10)	90 (100-10)
<i>Intelligence</i>		
Verbal Test	42 (50-8)	92 (100-8)
Non-verbal Test	62 (50+12)	112 (100+12)
<i>Arithmetic</i>	46 (50-4)	96 (100-4)
<i>Behaviour Rating</i>	48 (50-2)	98 (100-2)



A glance down this list enables the reader to compare the scores for the non-verbal intelligence test with those for reading accuracy, and the discrepancy throws into relief both the nature of his handicap and a prediction of how far it is remediable. On a good non-verbal test of general intelligence he is above average, while his scores for behaviour are almost average, these two facts combine to give a good expectation concerning the chances of his improvement in reading should he be given suitable help.

If the record card depicts these scores by means of a histogram, sorting the cards according to the children's capacities and abilities is simplified.

The various categories for selection for secondary education, ranging from superior to the mentally handicapped, will accord with the following ranges of marks on the record card

Superior (+1 sigma and above)	65 to 95	} Selective <sup>1</sup> grammar and technical schools
'Average-superior' border-line	60 to 65	
Average (+ $\frac{2}{3}$ sigma to - $\frac{2}{3}$ sigma)	40 to 60	
'Average-dull' border-line	35 to 40	} Secondary modern and non-selective <sup>2</sup> technical
Dull and backward (-1 sigma and below)	20 to 35	
'Dull-mentally handicapped' border-line	15 to 20	
Mentally handicapped (below -2 $\frac{1}{2}$ sigma)	5-15	} Special school

A scheme for scholastic recording of this kind on a standardized scale common to all tests used would be of great value to head teachers when allocating children for suitable types of secondary education in such a scheme as that so successfully adopted by the Walsall Education Authority<sup>2</sup>. Here each school is awarded a proportion of the places available in the various kinds of secondary schools according to the distribution of intelligence quotients in each primary school.

<sup>1</sup> 'Selective' means here that selection has been made primarily on the grounds of the general factor of intelligence.

<sup>2</sup> Vide V. J. Moore in *British Journal of Educational Psychology*, vol. xviii, pt. 1 (1948).

This scheme throws the responsibility for selection on to the head teachers and staffs of primary schools and, of course, creates an urgent necessity for systematic recording of a relevant nature for each pupil.

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### CHAPTER III

## THE RELATION BETWEEN TESTING AND EDUCATIONAL METHOD

Tests may be classified into two major categories, those for prediction on the one hand and those for measuring acquired knowledge on the other. Those intended for prediction, the tests of intelligence, are multiplying steadily and are of several varieties, chiefly verbal and spatial. They are used in the main to assist in classifying children into various groups for secondary education, each group intending to follow a special curriculum, say of a practical or abstract or general nature. However, once pupils are assembled in their schools, whether they be primary or secondary, the intelligence measurement is of less practical interest than the measurement of acquired knowledge. On the practical level the scholastic test is of more value to the teacher than the intelligence test, for it is obvious that children of like scholastic ages, grouped together, can benefit most from group methods of education in the 'tool' subjects. This is so whatever the range of intelligence in the class is, and becomes increasingly true at the higher age levels.

### TESTING AND TEACHING ARITHMETIC

Thus the criteria for grouping children within the school will be available after applying the routine standardized tests of acquired skills in the subjects of reading and arithmetic. Such tests may give either a standard score or scholastic age or both. They may be timed or have no time-limit. A timed test of thirty minutes' duration such as Schonell's Essential Mechanical Arithmetic Test will measure both speed and accuracy, and knowledge of the processes.

It will throw into relief those who are of superior attainment, and as such is a good test for selective purposes. At the lower end of the class lists, however, the information will be less detailed, and inaccuracy and slowness may obscure the significance of the result.

✓ If more detailed information of a child's acquired skills is required, it would be necessary to apply a test containing more examples of each kind of sum. This is particularly advisable in the case of backward children. Thus, if necessary, a timed test could be used as a preliminary sorting device, while a more detailed test in which the pupil proceeds at his own rate would assist where the uneven performance of backward pupils in speed and accuracy was to be expected. The Revised Southend Attainment Test in Mechanical Arithmetic was designed to this end. In this test ten sums per year are included until the age at which the four fundamental processes are established. After this there are five sums per year. Altogether the test contains sixty items, and the arithmetic ages range from 6 up to 15½ years. It is not timed, and the two test sheets for the children's use make it possible for the pupil to begin at the level in which he is adept and end at the level in which he fails consistently. Thus the upper limit of his skills is defined in terms of an arithmetic age which also has meaning in relation to the curriculum. The fact that the test is not timed allows for supervision of the lethargic performance typical of many backward children in test situations, and it is possible to ensure that an attempt has been made to work all the sums within the range of the curriculum which has been experienced.

A test of the arithmetic skills of the backward should follow the curriculum closely in order that arithmetic ages obtained from it will have meaning in terms of the curriculum. For instance, on the Revised Southend Attainment Test in Mechanical Arithmetic an arithmetic age of 7.6 years indicates that at the end of the infant stage most children have mastered the formal process of adding with carrying.

figures. Some schools of educational thought would wish this stage to be deferred. They advocate that intensive number experience is more important in the second of the infant years than formal work. The writer leans towards the view that it is possible to provide both intensive general number experience and practice in the formal process of addition during this year with the average or superior child, but, of course, the slow developer will not learn the formal process with the same degree of insight. It would be advisable not to press him to achieve this if only it were possible to distinguish the slow developers at this age. However, it has been found that the average child can acquire the skill of addition with carrying figures in schools providing plenty of number experience, and there is every psychological reason for establishing number concepts of all kinds as early as possible in order that they may become deeply ingrained habits of thinking, even as reading and writing. The attempt to teach further formal processes prematurely is to be as much deplored as teaching the children to learn by heart poems containing sentiments of the adolescent and the adult. Very few teachers would choose wrongly in literature, but the same cannot be said of arithmetic.

The arithmetic ages which indicate an essential need for number experience lie between 7 and 9 years. This experience, however, should not be confined to manipulating material objects such as sand, water, counters, and beads. The power of reasoning in words with the aid of the four processes can be established in the stages represented by the arithmetic ages prior to 9 years. This number experience through the avenue of oral problems underlies all future ability to exercise initiative in solving arithmetic problems with the aid of formal processes. Number experience of both the oral and the concrete kind provides a matrix of general experience which will facilitate the assimilation of more complete formal processes as each stage of the curriculum is reached.

The scholastic age derived from a test of mechanical

arithmetic relates, therefore, to more than the formal process. It should suggest a type of informal experience which is appropriate at each stage and also the formal process which is next on the list.<sup>1</sup>

### TESTING AND TEACHING READING

In the testing of reading the same principles apply. The Burt (Rearranged) Word Reading Test is a reliable instrument for grouping children for word study, reading practice, and written work.

A reading age of below 7 years on this test should suggest that, whether the child is young or old, he needs to be provided with a set of primers which introduce new words gradually, with intensive practice of those already introduced. It also means that each page or paragraph must be approached as reading matter to be taught sentence by sentence, with vigorous flash-card study of new words. Finally, it means that the pupil is not yet capable of writing prose on his own account and that almost all written work should be based on the vocabulary of the book. Backwardness at this stage can remain without alleviation if books of the primer type are not available.

A reading age above 7 years usually means a far greater capacity to read well-graded books silently and for content, and witnesses the beginning of successful efforts in free composition to write more lengthy paragraphs. Spelling, too, needs careful consideration at this level, for in these attempts at composition there will appear many spelling errors if the children are to write freely, undeterred by doubt concerning the spelling of words. This is particularly true of the secondary school boy who is approaching a reading age of 8. In this event to draw attention to all the errors would be educationally unfortunate. However, if a sentence which contains several spelling errors is selected for special

<sup>1</sup> For a further discussion of these points, see *The Young School Failure*, pp. 106-114.

study and presented to the pupil in its correct spelling, the greatest advantage will result, for the words were originated by him as representing ideas from the background of his own experience

Finally, the reading age of 10 years is an important one, for this is the upper limit of mental growth for the duller children who are not mentally handicapped. Thus, in scanning the reading ages of the pupils who are leaving secondary schools, a head teacher has reason to be disappointed if any of his scholars are leaving him with a reading age of below 10 years. This level of reading age indicates a skill which will not deteriorate through lack of practice to the level of illiteracy. As was remarked previously, advertisements, notices, and newspapers will be read with sufficient fluency to make reading an effortless matter, and should the pupil be drawn emotionally towards fiction he can provide his own entertainment.

This then is what scholastic ages should mean to the experienced teacher—namely, a series of general principles which apply to most children at their various stages of educational development. Moreover, the curricula for the basic subjects can be systematized in terms of scholastic ages if it is remembered that there will be a wide range of scholastic ages at all levels of primary and secondary schools.

One more consideration should receive careful thought, and that is the influence of fashions in educational method on test structure. Fashions change from time to time, and in arithmetic in particular there are differing schools of thought. Supposing an infant school was averse to the plan of systematic teaching in number and reading prior to the age of 7 years. Would not scholastic ages as low as 4 years, or even 6 years, be inappropriate? In a sense they would, and in another sense they would not. Such low scholastic ages would be inappropriate if there was a desire to compare mental age with scholastic age.<sup>1</sup> If, however, the figures were regarded merely as indicating the amount

<sup>1</sup> I am indebted to Dr J. Duncan for this point

of the curriculum which has been assimilated, they do not seem so inappropriate. The exponents of a deferred formal approach to the tool subjects claim that the children make up for lost time rapidly because they learn so much more quickly. It should not be difficult therefore to regard the first twenty words on The Burt Reading Test as belonging to the year 5 to 6 instead of twenty for the years 4 to 6 (that is, ten for the year 4 to 5 and ten for the next year). A school could validly raise the initial scholastic age afforded by the test to the age at which the first processes were taught. A little trial-and-error testing at yearly intervals would provide information as to the age at which the average child in a particular age group caught up with the more conventional scholastic age of the standardized test. It seems that by the age of 8 years the pupil of to-day is as advanced in reading as pupils of twenty years ago who began formal learning much earlier. In mechanical arithmetic the past and present day levels coincide at about  $9\frac{1}{2}$  years.

To sum up, it cannot be too strongly emphasized that tests are dependent for their form upon curricula,<sup>1</sup> and that it would be unfortunate if tests were regarded as determinants of curricula. This appears to be at variance with much that has been said about relating the scholastic age and the curriculum, but a little thought will reveal how the two ideas are not incompatible. In fashioning tests the curriculum is the deciding factor, yet once the tests are constructed they imply stages in the curriculum. When, however, the curriculum changes the tests must either be revised or abandoned.

<sup>1</sup> See Ministry of Education circular No. 151, July 1947



## CHAPTER IV

### THE INFANT SCHOOL SPECIAL CLASS<sup>1</sup>

WHEN the educational survey was made in 1936 it was found that no less than 22 per cent of the children in the infant departments were markedly retarded educationally

It should be emphasized that, provided the junior school has the organization which will give these children the groundwork they should receive in their first two years of schooling, this constitutes no problem of any dimension. It is possible for the child of good average intelligence to make up all the infant groundwork and achieve an average standard in his first year in the junior school

In order to know how to provide for children who lag behind markedly in the infant departments it is necessary to inquire into the reasons for such a high percentage of retardation during these years. It was found that 50 per cent of these retarded infants were of average to superior intelligence. The other 50 per cent were dull

It is clear why a dull child should be retarded—simply because his thought-processes are in too immature a stage of development to enable him to assimilate the material of formal training in number and reading. He has a weak span of attention, he is distractible, and not ready emotionally to feel the joy of achievement in learning the written symbol. In extreme cases he may be a defective whose mental age when he enters the school at 5 years of age will be 3 years. No more can be expected of him than is demanded from a child in the younger section of a nursery school. It is a waste of time and injurious to the child to attempt formal training in such cases. It would seem that

<sup>1</sup> For a fuller account of an early method of approach to the problem of backwardness, see *The Young School Failure*

routine formal training in number and reading should be delayed in the case of all children with intelligence quotients below 85. When one realizes that these children do not attain a mental age of 6 until they leave the infant department, or even till later, it would appear unwise to subject them to the normal requirements. They will cover the same ground in reading and number so much more quickly if they make the attempt when they are mentally more mature. They will do so with a sense of joy in achievement and their teacher will not suffer from a sense of frustration. These remarks apply to only 50 per cent. of retarded infants. The intelligence of the other 50 per cent. should enable them to learn at the normal or more than the normal rate. These children were given an individual psychological examination, and it was found that many of them were suffering from some form of personality disturbance. When a child is living in an environment which fails to give him reassurance and a feeling of security a state of permanent anxiety is set up in his emotional life. This will cause him to turn away from any effort to deal with problems set by society. He may retreat into apathy and day-dreaming. He may set himself to be revenged and become an aggressive nuisance or a small pilferer. He may seek diversion in his avoidance of effort and incidentally gain attention by constantly interfering with something which should not be his concern in the classroom. The abnormal emotions of fear and anger will determine his personality trends; he will be unable to control the motor excitability which is normal in the restless activity of the child of nursery school age. The factor of self-control is absent because that which is to be controlled—his tendency to fear and anger—is too strongly operative. It is possible he may display these symptoms and in addition be very dull. This child constitutes an even greater problem.

If the home life of these children is investigated, invariably one will find that the trouble has been caused by the parent-child relationship. Dr Susan Isaacs, in her book *The Nursery*

*Years*, gave such a successful account of the subtle effect the parent's attitude has on the child's personality in the pre-school years that to attempt it here would be superfluous.

Among the more intelligent children physical weakness and absence from school does not seem to be a frequent cause of retardation in the infant school unless it is accompanied, as it often is, by personality disturbance.

Thus retardation in children of infant school age has two main causes—dullness and maladjusted personality.

In making provision for these children it would seem advisable to take the long view and not concentrate on the immediate solution of their scholastic difficulties. In order to do this the infants' mistress must if necessary be prepared to allow them to leave her department knowing nothing of formal attainment, and the junior school staff must be prepared to receive them in their complete ignorance of arithmetic and reading. It is not meant that they must of necessity know nothing at time of promotion, but it is advisable to be prepared for this.

The immediate aims of the infant special class should be:

- (a) To provide educative activities for the dull
- (b) To provide facilities for personality adjustment for those suffering from unbalanced emotions.

Any child who is capable of response to formal training should not be put in the special class whatever other problem he may present. If he steals or bullies but is keeping a good position in his class, his personality disturbance is of a very superficial nature and can be dealt with usually by means of co-operation with the home or by the direct influence of the teacher. Occasionally a child who is doing well in school work but who displays surface symptoms of maladjustment such as restlessness, interference with other children, and pilfering has been sent for a certain period every day to the special class while his own classmates have been engaged on painting, music, or games. Usually, however, this part-time attendance is not satisfactory, and the child fails to become part of the group.

Only children who have failed markedly by the end of their first year to make any appreciable progress are admitted to the special class. The selection is made by the headmistress, but she usually discusses the children with the psychologist, and in cases which would seem to require intensive treatment a special diagnostic examination is made. In these cases the parent is interviewed by a trained psychiatric social worker, while the educational psychologist interviews the child. In cases of extreme personality disturbance the advice of a psychiatrist—that is, a medical psychologist—is sought. If it is felt to be necessary these children, accompanied by their parents, attend weekly for play therapy and parental guidance.

The remainder of the children are helped over their difficulties by the organization of the special class.

#### CLASS ORGANIZATION

The maximum roll of these classes is about twenty. The kind of class organization described below is not possible with a larger number than this. A class of this size is sufficient usually to cater for a school of three hundred or more, because, as has been pointed out already, the children are selected at the end of their first school year. It accommodates those children who fail to respond even in a 'C' stream.

The main feature in its curriculum is the provision for play activities which are known to have healing or therapeutic value. There is a low sink and tap in one corner of the room. There are small zinc baths and washing-boards, a clothes-line and pegs, dolls' clothes, bedding, and rubber dolls, bubble-pipes, which blow four bubbles simultaneously, enamel mugs for baling water, a large sand-tray and boats, and tea-sets. These are arranged in the wet corner, near the sink, and all that side of the room is covered with linoleum, which dries more easily than soaked wooden blocks. The children have rubber aprons. Another corner is given over to housekeeping, where those wishing to be mother with the

newly born rival can express their dual attitude of hate and love by alternate slapping and cuddling. The doll's pram is large enough to accommodate the children themselves, and socializing activity can often be seen when the neglected, unloved child climbs into the pram and is wheeled about by the child who emulates her mother's solicitude for her younger children. Building-blocks provide facilities for the obsessively aggressive. A favourite activity is to build a high tower with elaborate caution and then demolish it aggressively. A painting-board runs along one side of the room and painting-materials are available. The papers become covered with brush-strokes which do not appear to represent anything, but the child will confide in her teacher that it is a fire-engine inside a house, his mother holding out her arms for him, a motor-car crashing into a tree. A psychologist can tell at once whether the infant special class is performing its function adequately by the nature of the phantasy expression. The child passes from blankness in self-expression to the production of extravagant phantasies, and thence to conventionally correct self-expression. At first there is an inability to express ideas or feelings in any connected or symbolic form. Then gradually one will notice the rubber baby is held under water and viciously drowned or shaken most brutally, that a child will bale water from the bath into the sink on and on with an absorbed expression on her face. This absorption in play is a necessity if it is to have therapeutic value. The sympathetic presence of the teacher is also necessary, for in order to benefit by the expression of aggressive phantasy a child must be made to feel that what he is doing is not frowned on by adults with whom he has an emotional relationship. It is a very difficult fact for a teacher who is not familiar with the new psychology to understand that it is unconscious internalized fear which causes a child to be aggressive, and that what he is most afraid of is his own desire to inflict injury. If, however, he inflicts injury in his play and it is not frowned on by an adult he loves, then the internalized fear has been tried out

in external expression, and after each such expression of it he is reassured that it is not a fearsome activity which he must pursue in order to know the worst that can befall him subsequently. Gradually the restless urge to aggression dies away, and the child can pay attention to the queer marks and shapes which go with certain noises called numbers and words. A small child should seldom be punished for aggression, although he should be removed from the victim. A formal apology can be suggested by way of expiation. This directs attention towards the sufferer and brings the sympathetic impulse rather than the fear-trends into prominence. Even if the child will not apologize, the influence of the suggestion will not be lost. It should be remembered that all these remarks concern the education of immature and maladjusted children and that the teacher is in an atmosphere where free play with the minimum of disciplinary interference is possible. At least half the morning is given over to free, undirected activity of this sort, where the teacher co-operates and only interferes where disaster threatens.

One-quarter of the day—preferably the last half of the morning—is devoted to quieter, more restrained activity, where the children sit at table, only moving to obtain some necessary piece of apparatus, to approach the teacher, or to converse with another child about his activity. Drawing-boards and chalks, Plasticine, pencil and paper, jig-saw puzzles, scissors, and beads are suitable kinds of apparatus for this period, during which there will be some approach to more formal learning, with close supervision of individual effort. At the beginning of the year only two or three of the children may make visible progress, but gradually all except the very dull or the very maladjusted will go forward. Even the latter usually make a fitful start with periods of lapse at frequent intervals. At the end of the year very few children will be able to score anything on the standard reading accuracy test, but they will have acquired a confident, positive attitude towards learning to read and have received

valuable training in observing word-shapes. Their practice in number will have been largely incidental, and they may at best be familiar with some number concepts. There is no striving after formal results, and the teacher must feel that the happiness of the children is the chief object of her organization. She will be able to introduce corporate activity more in her last term, preparing the children for the atmosphere of the junior school. The value of this year's activities will be seen in the eager contented fashion the children settle down in the junior special class where formal work becomes a disciplined reality.

In Southend it was possible to observe the effect of such a year on children who had older brothers and sisters in the junior school. For instance, one family had a young representative in the infant special class and an older brother in the junior school. The small boy was almost an exact replica of the older one—the same sullen resentment and evasiveness, with occasional truanting, and the same unresponsive attitude to class instruction. The older boy was several years retarded, the younger one after a year in school was making very little progress. By the end of the year in the special class the smaller boy had lost the habit of scowling from under his eyebrows and grunting monosyllables in a sulky, monotonous growl. All that was left of it was an appearance of shyness that could be mistaken for modesty. He was outgoing and sociable and very skilled at handwork, particularly modelling. At the end of his first year in the junior department special class he was sufficiently advanced to take his place in the second-year 'B' stream. His work was very neat, and his drawing and handwork exceptionally competent. This boy was one of the more outstanding successes. He was of good average intelligence.

All the children, with two exceptions, benefited in a similar manner. These two were deeply neurotic children receiving special treatment. The border-line defectives, of course, may spend all their school-days in a special class, but it should be cause for satisfaction if they are outgoing and

attain satisfaction in the junior school from their limited but lively achievements.

Perhaps the infant school provision for problem children is most important of all. Whatever influence is wrought before the age of 7 years may be of lasting value throughout the child's school-days, because these are the impressionable years and experience during this time is less easily eradicated than that of subsequent years. After the seventh year a child's personality is much more set and it is more difficult to give him the deeper reassurance which it is the function of the infant special class to bring about.

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## CHAPTER V

### THE JUNIOR SPECIAL CLASS

Most new admissions to the junior special class will arrive at the age of 7+ years unable to qualify for a scholastic age on the standardized tests. The curriculum for these children will need to include the syllabus of the infant department in so far as formal training is in question. In number it is a common error, for instance, to assume that these children are ready for a superficial course of addition up to 20 before passing on to addition in tens and units with carry-figures. In reading there is often the necessity to habituate the child to the association between the printed symbol and the conceptual elements it symbolizes. The psychological adjustment of the child to formal training is a necessary prelude which is less obvious than the teaching of words and processes. There is always the danger that reading may become a visual-auditory-vocal reflex and number a counting-activity of a similar nature. This kind of training will give results on mechanical tests but will not educate the child in the true sense. *Printed words must stimulate ideas rather than sound patterns, and number must come to represent an idea of quantity rather than a digital sequence.* If sufficient care is given to the ideational content of symbols the formal results will benefit beyond measure. The start will be slow but the acceleration will be much more rapid eventually.

Years of experimentation have accustomed the infant schools to this attitude of preparation, but junior schools commonly receive children at a stage when this is accomplished, and when the printed symbol is an accepted convention for most of the children. They can be given the most unlikely problems in arithmetic, quite divorced from their everyday experience, yet they will solve them without

question by the help of the devices they have been taught. The more immature child will still, however, be in the stage where symbol is not so readily related to experience, and it is the function of the teacher to bring the two into emotional relation either by presenting the symbol and then evoking the mental content to be associated with it, or by evoking the ideational content and then appending the symbol. The latter process is the more fruitful, and with some few children is the only way which succeeds at first. Skill in class-teaching depends on the ability of the teacher to do this. The method of presenting the symbol and then evoking the mental associations round it is more easily employed when a certain body of thought-symbol associations have been stabilized.

The use of standardized mechanical tests, which tend to be devoid of ideational content, may seem at first to be inconsistent with such assertions, but these, too, are necessary. They are intended to be but generalized methods of ascertainment which will suggest an appropriate methodological approach, but, of course, the method needed must be seen in relation to the test results and the limitations they suggest. Thus while methods of ascertainment may be generalized, method must be detailed. Each scholastic age will be a broad pointer to a region of method, as it were, which has reference to both form and content of scholastic skills.

For instance, a reading age of 4 1 years connotes a level of reading ability calling for the introductory book of a set of reading primers on the one hand and on the other an imperative need to elucidate word content before presenting word form to facilitate learning. A reading age then is a symbol with technical meaning for the teacher.

### THE ORGANIZATION OF READING

The reading ages of children in junior school classes range usually from 4 to 8+ years. It is possible to grade them and arrange them in groups according to their reading ages as measured by Burt's Reading Accuracy Test. Children with

reading ages below 5 can be taught in one group, those with reading ages of 5 to 6 in another, and so on. For some lessons in the week the children who have reading ages approaching the 8-year level can each take charge of two children who are working at the 5- to 6-year level, while the teacher can occupy herself with those at the 6- to 7-year level. These children are at a stage where quicker progress is possible, and it is most economical to concentrate on these, for as soon as they approach the 8-year level they will begin to read for content by themselves and will be provided more easily with individual work. It would seem to be a mistake in a class of this kind to spread teaching-effort equally throughout the class. The teaching of reading is a very slow process, which quickens in rate of progress according to the child's range of reading vocabulary. Even on theoretical grounds, therefore, it would seem feasible that the teacher should concentrate on those children who are approaching the 'quickenng-point,' which in terms of the reading test would seem to be 7 to 8 years. The better children having been carried to this point can then be left for longer periods with individual work involving written effort. They will have left the primer stage behind and will have embarked on the silent reading of easy narrations.

The children who are more retarded than this—with reading ages between 5 and 6 years—will be still in the mid-primer stage and will need some one continually at their elbow prompting as they go. A child at this stage to derive benefit from a reading lesson should read aloud at least five or six times in half an hour before a prompting supervisor in addition to hearing others read. He should feel all the time that, "Soon it will be my turn, and I must be ready." If this is not possible, his attention will wander from the meaningless symbols, and he will either seek diversion round him or lapse into day-dreaming if the former alternative is not possible.

In order to allow of such frequent efforts the group in which he reads should be no larger than three—two children

in charge of one other. This seems the maximum size of the group if the best results are to be achieved in this way. The leader can ensure that both pupils are 'keeping the place,' and the length of the waiting period is minimized. The leader should be instructed concerning his technique thus: "If a boy cannot read a word, tell him at once what it is, so that there is no time lost. If you don't know what the word is, come and ask me." These leaders can have a small note-book as insignia of office and can record their group and its progress in this. They will not fail to benefit themselves from such concentrated revision of easier reading matter.

There still remain the children with reading ages below 5 years who have to be catered for during a lesson in which all the class are reading. It may seem paradoxical to say that those who are in the sorest straits are those which require help least. But in learning to read this is so. If such a child still has a reading age of less than 5 after two or three years of schooling, there must be a good reason why this is so. Usually these children are extremely dull or emotionally disturbed to a pronounced degree—distractable and unable to attend, and consequently unable to recall. During a thirty-minutes' reading lesson it will be necessary for them to give only about ten minutes to actual reading matter. They are not ready for primer work. Most of the period can be used to draw and colour a picture of their own choice. Towards the end of the lesson the teacher can leave her promising 6- to 7-year reading group with some mixed sentences to sort out while she asks the children one by one what they would like her to print under their picture. Just one sentence per lesson will suffice at this stage, and the simpler its construction the better. The teacher will print it underneath the picture (it will be as well to ensure space is left for it by getting the children to rule off a narrow space at the bottom of the drawing-paper before beginning their drawing). She will ask the child to read the sentence he himself has composed after she has printed it. Supposing the child suggested, "The man is digging in his garden," or,

"It is me on the swings," the teacher—having printed the sentence and having heard the child read it once—will say, "Show me 'swings,'" "Show me 'on,'" etc. Then the child can copy the sentence underneath the teacher's printing, thus memorizing the word-shapes to which he has just been introduced. This method of teaching reading has time and again succeeded where others have failed. It



provides sufficient exercise to raise a child's reading age to the 5-year level. It succeeds because it uses the stuff of the child's own spontaneous mental life upon which to tag the symbols of written language.

There is no reason why as many children as possible should not make their own reading books in this way. It can provide the sole basis for written composition work for all children with reading ages at 6 years and below.

It is impracticable as a regular activity with large numbers because of the time involved in passing from child to child,

but in a thirty-minutes' reading lesson it is possible to attend in this way to a maximum of six children in the last eight minutes or so of the period. There are rarely more than six children with reading age of below 5 in a junior special class.

A set of reading books for these classes is mentioned later. It would seem necessary to stress that an approach which is solely phonic is very wasteful with special class children. Primers which begin with most of the words containing 'an' in their first page and 'ab' in their second, and so on, are more suitable as a later adjunct to a method which is based on the sentence unit. Phonic practice is introduced at a suitable level by modern primers, and some of these will be mentioned later. It would seem that phonic practice can take place as a class activity in which all children can join. Teaching of phonics can be regarded as the drill which will one day aid the child's reading, but not as a reading lesson proper. It is hampering to the child's progress if, when reading aloud, he has to stop in the middle of a sentence to build up a word phonically. It is better that he should be prompted quickly, so that reading for content is facilitated. When he is more adept at phonic construction he can use this technique with effect.

Recognition of phonic units can take place in word-sorting games. A number of small cards with the word printed beneath a picture can be mixed together in an envelope. The words can be of two or three word-families of simple phonic combinations such as '—at,' '—ip,' and '—en.' These can be sorted by the pupils looking at the word forms and recognition facilitated by the aid of the correlated pictures.

The *Beacon Infant Readers* give word-families in phonic relation at the end of the book. Emotional significance can be given to these, and practice effects enhanced by rhyming games taken as a class exercise. In phonic practice the association of visual with auditory stimuli is necessary. The words must be spoken aloud and seen in relation to the other words which are similar to it. Supposing the lesson is on the sound 'ame.' The words 'came,' 'shame,' 'lame,' 'tame,'

and 'game' are put on the board and sounded phonically—the initial sound first, then the final sound in one unit 'ame'. Thus each word will involve only the combination of two sounds. Then the teacher can start a game of rhyming couplets, the children supplying the last word thus

It is such a shame!  
My poor little dog is —— (lame)

At first all the children will not see what rhyme is intended, but they can learn from the older, more intelligent children. The couplet can then be turned about.

My poor little dog is lame  
It is such a —— (shame)

This again can be turned about to give exercise in the first word.

Another example is

When the toys came  
We had a good —— (game)

This exercise can be entirely oral with the exception of the words written on the board. There is no point in letting the children write these, for the material to be learned is of visual and vocal significance only. The rhyming couplets suggest a context for these.

All exercises round reading should involve the active contribution of the children rather than mechanical copying. The 'A L' Phonetic Reading Cards, by Dorothy Wray, provide additional incentive for individual practice.

The duller and younger children will not profit appreciably from exercises in phonic construction, but they will memorize the words by the look-and-say and sentence methods if the lesson is taken in this way.

#### A READING SCHEME

In the reading scheme described here the *Beacon Infant Readers* provide the major part of the reading material. Other books are added at various stages to give less able

children an opportunity for additional practice in the vocabulary before advancing to the next step

The following table of statistics reveals the necessity for such grading, and will indicate the number of books required for each group

#### READING-AGE GROUPS

*200 Junior Special Class Children, September 1938*

Reading Age in Years	4+	5+	6+	7+	8+	9+	10+
Approximate percentage of children	20	14	27	23	9	5	2

#### RATE OF PROGRESS TO BE EXPECTED IN TERMS OF GRADED READING MATERIAL

In one year the children with intelligence quotients below 85 will have made good progress if they have mastered *The Introductory Book*, *My First Reading Book*, *Picture and Talk*, and part of *Beacon* (I). Pupils of greater intelligence will have progressed more quickly.

The approximate reading ages which will result from mastering the content of the various groups of books are here indicated.

#### Reading Age 4-5 years

- |                                                             |   |                 |
|-------------------------------------------------------------|---|-----------------|
| <i>Beacon Infant Readers</i> , Introductory Book            | } | Ginn            |
| Book I                                                      |   |                 |
| <i>Seander Series</i> , My First Reading Book               | } | Arnold          |
| My Second Reading Book                                      |   |                 |
| <i>Beacon Infant Readers</i> ,<br>(Supplementary to Book I) | { | Ginn            |
|                                                             |   |                 |
|                                                             |   |                 |
| <i>Field Reader</i> (Book I)                                |   | Ginn            |
| <i>Happy Venture Readers</i> , Introductory Book            | } | Oliver and Boyd |
| Book I                                                      |   |                 |



**Reading Age 5-6 years**

- Beacon Infant Reader* (Book II) }  
*Clever Folk*, Supplementary to } Ginn  
*Folk Tales* (Book II) }  
*Seander Series*, My Third Reading Book Arnold  
*Field Reader* (Book II) Ginn  
*Happy Venture Readers* (Book II) Oliver and Boyd

**Reading Age 6-7 years**

- Beacon Infant Reader* (Book III) }  
*Wise Little Goat* (Supplementary to Book III) } Ginn  
*A First Book of Verse* }  
*Field Reader* (Book III) }  
*London Dramatic Books*, First Series (Book I) U L P  
*Happy Venture Readers* (Book III) Oliver and Boyd

**Reading Age 7-8 years**

- Beacon Infant Reader* (Book IV) }  
*Annancy Stories* (Supplementary to Book IV) } Ginn  
*Faithful Beasts* }  
*Field Reader* (Book IV) }  
*A Second Book of Verse* }  
*London Dramatic Books*, First Series (Book II) U L P  
*Happy Venture Readers* (Book IV) Oliver and Boyd

**Reading Age 8-9 years**

- Beacon Infant Reader* (Book V) Ginn  
*London Dramatic Books*, First Series (Book III) U L P  
*Little Black Sambo* }  
*Little Black Quibba* } Helen Bannerman Nisbet  
*Little Black Quasha* }  
 etc }  
*Story Pageant Series*, by C M Martin Cassell  
*Children's Hour Readers* Oliver and Boyd

**Reading Age 9+ years**

- Beacon Infant Reader* (Book VI). Ginn  
*Macmillan's Coloured Story Books* (Nos 8B, 10B, 3A, 4A), by Kate Lay.

By the time a child has reached a reading age of 8+ the time for reading silently has come, provided there is available an abundance of easy reading matter carefully graded. Backward children with I Q above 85 will do well if they leave the junior school special class at the age of 11 with reading ages of 8+ or 9+, for the mental age of such a child of 11 is little more than 9 years. Pupils with I Q's below this may have reading ages of round about seven years when promoted to the secondary school.

#### ACTIVITIES ROUND THE VOCABULARY OF THE READING BOOKS<sup>1</sup>

Any device which will quicken the children's emotional interest in the vocabulary of the reading books is valuable as an adjunct to the reading lesson. The more real Mother Goose is made to the children, the more readily will the visual symbols connected with her be learned. The following devices will help to bring about this effect.

(a) **Dramatization.** Before the children in each group begin a new book it is read to the whole class. Then the story is acted in a simple fashion. Dramatic detail is suggested by the teacher in the early stages when the narrative detail is limited by the range of vocabulary. Thus a series of plays will form the dramatic repertory of the class. There will be the story of Mother and Kitty and Baby and Rover, Mother Goose and her relations with Jack and Jill, The Three Wise Men of Gotham, etc. The vocabulary of the book, but not its sentence construction, will be introduced into the speech of the playlets. An example of a playlet woven round the theme of *Field Reader* (I) is as follows.

##### SCENE *Outside Mother Goose's House*

*Enter JACK and JILL*

JACK I wonder who lives in this little house?

JILL I can see a name over the door. Let us look

<sup>1</sup> For further ideas on this subject, see *The Young School Failure*

JACK Can you read it? I can't

JILL I think it says 'Mother Goose'

JACK Let us knock Perhaps she will give us some water

I am thirsty after running down the hill

(JILL *knocks and calls*) Mother Goose! Mother Goose!

(MOTHER GOOSE *emerges*)

MOTHER GOOSE Why—it is Jack and Jill

JACK Yes—how did you know?

MOTHER GOOSE I know your cousins Ruth and Kitty and

John

JACK Will you give me a drink of water, Mother Goose?

I have run all the way down the hill

MOTHER GOOSE I have used all my water I can tell you

where you can get some

JILL Where, Mother Goose?

MOTHER GOOSE You must go up the hill to the well Here

is a pail

(JACK *takes it*)

JACK Come on, Jill, I will race you up the hill (*They run*

*off*)

MOTHER GOOSE Mind, children You will fall

(*A loud scream off stage*)

MOTHER GOOSE (*hobbling to look*) Where is Jack? Where is

Jill?

*Enter JILL (holding her knee)* We fell down Jack has cut his

head

*Enter JACK (holding his head)*

MOTHER GOOSE Poor Jack! Poor Jill! Come in! Come in!

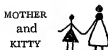
Let me see to it Jack has broken his crown

(b) **Drawing.** Scenes suggested by the plays and reading books can be drawn unaided by the children They can label these with words from the books This device can be used to occupy the children when boredom sets in towards the end of the reading lesson

It is analogous to the idea of the 'work-books' which are now being published for infant schools Older children can make their own work-books instead of relying on published drawings

Similarly, pictorial dictionaries of the vocabulary of the

book can be composed. The verbs can be exemplified by drawing match-stick men in action thus:



The children soon get used to drawing pin-men, and these books are valuable for vocabulary revision.

### SPEECH-TRAINING IN JUNIOR SPECIAL CLASSES

#### AN IDEA FOR ORAL COMPOSITION

If the children in junior special classes can be trained to express themselves in coherent sentences, the work with reading and written English is helped forward. Mention was made at the beginning of the chapter of the need to set free the verbal expression of ideas to enable the children to become spontaneously articulate.

The main purpose of oral composition is to encourage spontaneity of sentence formation. In order to elicit this, the children's interest must be alive and their imaginations stirred.

In the case of special class children where verbal capacity is limited, discussion round a topic between teacher and children is less productive than with children whose progress has been normal.

It is necessary to conjure into concrete symbolism the

phantasies suited to the pupils' emotional maturity. This can be done in a most exciting way through the medium of Plasticine and drawing. At first the teacher can demonstrate rapidly by way of introducing the lesson. While the class is watching she can say, "Watch—I am going to make a dog. There he is. Here is his collar and chain. He is fastened up in the garden. A cat comes by—here is the cat. The dog wants to chase the cat. Look at him jumping about on his chain. Puss thinks she is quite safe. The dog barks and jumps and pulls. Look, the chain is breaking! Off he goes. Grrrr! He has bitten the fur on the cat's tail. Poor puss. What a narrow escape!" The appropriate actions for the animals are made while the description proceeds. Needless to say, no great skill in modelling is necessary during the demonstration. The children are then asked to make up a little story like that. At first they may need the stimulation of a suggested theme, such as, "Make up a little story about a naughty baby duck, or about a policeman, or about a house on fire, or a motor-car."

After a few lessons the children will spontaneously evolve their own stories. A further elaboration is to distribute papers and crayons so that a background can be drawn to the small drama. The latter part of the lesson is occupied in the oral demonstration of their stories by the children. The themes chosen will depend on the emotional maturity of the individual children. Children with reading ages of 70 years or more can choose one of their sentences to write down, the teacher writing on the board any words requested by the children.

This method is most successful with boys in junior special classes. It would seem that on the whole boys are much more fond of Plasticine modelling than girls.

### PUPPETRY

The production of puppet plays carries the idea developed in the preceding section a stage further. It is a relatively complex activity involving self-discipline and co-operation

with others. For this reason the stages leading up to the production of a play must be gradual if the children are to retain spontaneity in the activity. If the theme is too difficult or too unfamiliar the children will be inhibited and confused and will need prompting throughout, in which case the production will result in the learning of a set play provided by the teacher's suggestions.

It has been found that the type of puppet most suitable for very retarded juniors is that which is dangled from a string. As many as four or five children can participate in the production of one play with this type of puppetry. The children merely have to move their puppets on and off the stage and in relation to one another and can confine the major part of their mental energy to speaking the words.

The puppets can be made simply out of rolled strips of newspaper with pingpong-ball heads from which the suspending string emerges. Stuffed-rag heads are another possibility. When the puppets represent human beings their clothing can consist of coloured paper or odd pieces of material. It is unnecessary to set too high a standard of finish in costume. Animals will be suspended from the two ends of the body with pipe cleaners passed through the trunk to form a tail and support for the head. They can be painted an appropriate colour.

The children will make puppets at home and dress them too, once they have been taught this simple technique. The scenery for backgrounds and side wings can be prepared in art lessons—an interior with fireplace and pictures on the walls and an outdoor scene with trees and flowers can be kept as stock scenery.

There should be sufficient puppet theatres to accommodate the class of thirty in groups of four or five.

To begin with, familiar stories such as "Red Riding Hood," "Sleeping Beauty," "Cinderella," "Beauty and the Beast," will give wide scope for dramatic production. The children will soon grasp the idea of breaking up the story into scenes or acts.

Puppetry lessons in the junior special classes need to be introduced with much suggestive detail. The purpose of this will be to present the theme as realistically as possible and clarify the development of the story in the minds of the children.

After the story has been told by the teacher, the working out of scenes can be done in Plasticine modelling. If the story is "Red Riding Hood" the children can model the mother, Red Riding Hood, the wolf, the grandmother, and the woodcutter. If there is time, the grandmother's bed too can be made. In the next lesson the children can be encouraged to cause the mother to speak to Red Riding Hood, telling her to go to her grandmother's house. This can be practised first, the children volunteering to show how they would say it, the teacher suggesting and encouraging at each attempt. Then the meeting with the wolf can be developed, and so on until the entire story has been acted and spoken in a most elementary fashion by the modelled characters.

The second stage would be the demonstration in puppetry by the teacher of what has been enacted previously in Plasticine. There need be no more than two characters on the stage at once, so this can be done by one person. She will announce the play and scenes and cause the characters to speak their parts.

The third stage would be the group practice of the play, each group of four children having its own theatre and puppets. The teacher at this stage can walk round giving suggestive help to the weaker individuals.

After a period of practice, groups can be encouraged to perform their play, entertaining the rest of the class. During these periods the teacher can sit with the audience, thereby enhancing the dignity of the spectators and leading the applause.

At the beginning of the show the leader of each group announces the name of the play—for example, "This is the story of Red Riding Hood." Then the grotesque characters are introduced one by one by those responsible for their

movements. The child lowers the puppet before the front curtain and says, "I am Red Riding Hood," "I am Red Riding Hood's mother," "I am the wolf," and so on till all the characters have been introduced.

Then the leader announces "Scene (I) In Red Riding Hood's home"

The curtains are drawn and the play begins

MOTHER (*enters*) Red Riding Hood, Red Riding Hood!  
Where are you?

(*Enter RED RIDING HOOD*)

RED RIDING HOOD Here I am, Mother!

MOTHER I want you to take these things to Grandma. She is ill. There's some butter and eggs and bread for her.

RED RIDING HOOD All right, Mother.

MOTHER And mind you go straight there. No picking flowers in the wood. The wolf will get you if you do.

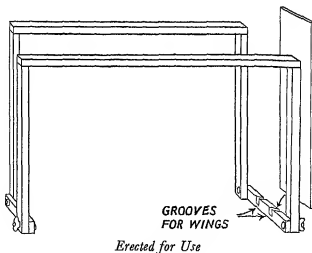
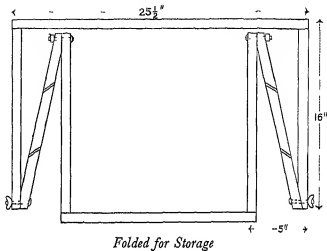
And so on.

In the second scene Red Riding Hood meets the wolf, in the third the wolf eats the grandmother, in the fourth he interviews Red Riding Hood in bed and is killed by the woodcutter, who runs in when he hears Red Riding Hood's screams.

The words are simple and straightforward and for the most part originated by the children. The children sometimes elaborate and improvise as they go along. There is no strict learning of parts, but there is preliminary practice of the order of the speeches and the entrance and exits of characters. The children memorize the purport of the speech rather than the exact words.

The storage of puppet theatres is rendered less difficult if a folding type is used. The kind used in Southend were made quite cheaply by the school's building and repairs service. These consist of a frame which folds flat, and four side wings fitted into slots. The back scenery paper or cardboard pins on to the back frame. The puppets enter through the wings. The construction of the theatre is shown on p. 80.





DESIGN OF THEATRE

This theatre frame was designed by Herbert Highfield, M A

No better device than this has been found to elicit spontaneity of speech. The teacher must be prepared for noise and movement of an informal kind while the general group rehearsals are taking place. She can walk round encouraging and helping children who are less fluent

Each little troupe can keep their properties and puppets in a large boot-box

Thus storage-room will be needed for seven or eight theatres and boot-boxes. The entire outfit would take up the space of one corner to the extent of two cubic feet at the most

It has been found from experience that puppetry lessons should be grouped intensively over a period of the term and then, when boredom sets in, abandoned for a considerable period. One junior special class arranges about six lessons in a fortnight in each spell, one at the beginning and one at the end of each term

Glove-puppetry, although excellent for more mature and intelligent children, is rather hampering to the spontaneity of special class children in junior schools. The hand has to be moved consciously at the same time as the speech is uttered, and this greatly adds to the complexity of the mental operations. In dangling puppetry the hand movements are simplified to movement in space without digital movement. Another factor is the limitation of co-operative effort in glove puppetry. It is difficult for more than two children to produce a play together because of space limitation caused by the need to move the arm from below the screen.

### WRITTEN EXERCISES

#### THE USE OF PICTURES (for reading ages of 7+ years)

The cheap books which can be bought at multiple stores provide many interesting gaily coloured pictures suitable for stimulating verbal expression. The illustrations cut out of one book can form a consecutive serial on such themes as "Holiday Fun" or "On the Farm" or "In the Train," while

from others a story will be depicted, such as scenes from the life of Dick Whittington. If the pictures are mounted on a larger piece of cardboard, the vocabulary to be learned can be printed boldly round the edge—about five words to a picture. On the back of the card five simple sentences can be printed with the words which are printed on the front omitted. When the five words have been practised they can be inserted in the correct spaces in the sentences and written out as a piece of consecutive prose in the children's exercise books. It is essential that the words chosen should be key-words in the emotional interest of the picture. For this reason it is best to choose first five simply worded sentences which describe adequately what is *happening* in the picture and select the vocabulary to be learned from the sentences subsequently. Verbs and nouns are good key-words, while adjectives have less mnemonic value.

Several of these pictures could form preparation for a consecutive composition on the same theme, or in the case of illustrations of a story, the completed set will tell the whole story.

#### GUESSING GAMES (Reading age 7+)

*Required* A number of small coloured pictures of a solitary article, animal, or person. Books of these can be obtained in multiple stores. On the back the name of the article is printed, such as 'pie' or 'bear' or 'postman'. On separate cards are printed the clues, such as

I am good to eat  
I am baked in the hot oven  
I am for dinner  
What am I?

The child matches up the clue cards with the answer pictures and writes out the answer or even the whole riddle. As many as five clue cards and five answer pictures can be included in one envelope.

It is not a difficult matter to compose riddles of this kind

once Book II of the primers has been mastered, for by that time the child's reading vocabulary is sufficiently extensive to give scope for the formulation of phrases and sentences. For instance, if it is desired to give practice to familiarize the vocabulary of the *Happy Venture Readers* up to the end of Book II, any of the objects included in the text would serve as the subject of a riddle. Supposing 'Shadow' is chosen from p. 31, then it is simple to compose four or more descriptive phrases associated with this word, such as "I jump if you jump. I run if you run. I am now tall, now small. You can make me like a dog, a duck, or a rabbit. You will not see me in the dark. What am I?"

All these words are part of the vocabulary of Book II, and such exercises are of value because they enable the children to experience the words in different contexts, thus giving them additional associative ties as aids to memory.

### OTHER SUBJECTS

History, geography, and nature-study need not be regarded as separate subjects but rather as part of the English scheme. The teacher will tell the stories illustrating the facts, while the application of the lesson can be accomplished through one of the drawing, modelling, or dramatic activities which have been described.

These children are not too young to be introduced to world location. A large blank map of the world can be pinned on the wall and some of the children's drawings pasted in the countries to which the incidents refer.

This type of child is surprisingly interested in learning the more common topographical terms, and modelling and drawing valleys, mountains, lakes, islands, rivers, and seas. Topography is closely associated with early phantasy life, and this lends emotional impetus to this kind of lesson. A lesson on the Mediterranean region can be based on the Greek story of the creation. The fight between the young and the old Gods and the endeavour to pile Ossa on Pelion

will lend colour to a superficial study of the physical relief. The reference to earthquakes and burning mountains in this story is interesting. Such books as *Myths of Hellas*, translated from the German by Younghusband (Longmans, Green and Co.), are very helpful. The Butcher and Lang translation of the *Odyssey* provides an excellent phantasy background for 'geography' lessons. The stories will need to be told in a simple manner, but the accounts of Odysseus wrestling with the forces of nature enlarge the children's grasp of the physical characteristics of the earth. For instance, the departure of Odysseus from Calypso's island, the winds and storms, his wreck on a rocky coast, his seeking sanctuary in a river mouth, form preparation for a study of ports and light-houses which may be made in the senior school.

It is necessary to forget the academic custom of dividing the day into sections devoted to various subjects. It is more helpful to aim at enlarging the range of the child's interested attention to the world beyond his immediate confines by the use of words in a story setting.

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## CHAPTER VI

### SENIOR SPECIAL CLASSES

THE segregation of retarded children in the senior school raises a question of psychological importance which has been much debated in recent years. The adolescent is much more sensitive to social appraisal and disapproval than the child of junior school age. If the label 'backward' or 'special' is continually brought to his notice he will feel inferior, resentful, and apathetic. The 'C' stream class is distinguished from the 'A' and 'B' stream classes by these emotional characteristics in addition to inferior scholastic status.

It is common knowledge that the scholastic age range in a third-year Senior 'C' Class can be as much as from seven years to thirteen years. In this event the relatively efficient and the relatively retarded are dissatisfied with a curriculum which caters for the middle group. There is nothing more exasperating than being asked to do work which does not exercise the mental powers to their maximum, and no less annoying is it when there is little hope of success because the standard of work demanded is considerably above present ability.

The least able members of the class become hopeless and apathetic and accept their deficiency as a necessary part of themselves. If one of these children is asked, "Why can't you read?" the answer is often, "I don't know. I never could." It is interesting to recall the change which took place in a girl of 13 years. She was in one of the first experimental classes set up in the borough, and at the beginning of a six-months' period she had a reading age of 7 years. She was provided with work suited to her reading ability and towards the end of the experimental period she was asked

quite casually how her reading was progressing. She replied, "Oh, I read a lot now. They call me 'Reading Annie' at home." From tacit acceptance of her inability to read she had reached out towards the goal of success and was fast becoming a satisfactory reader. She was a rather dull girl with an I Q of 87, implying a mental age of about 11 years. Her reading had been four years retarded.

It would seem from this and many similar experiences that scholastically retarded children gain their sense of self-evaluation more from their own sense of achievement than from being labelled this or that. It is a question as to whether it is preferable to be a dunce in a 'C' class or a progressive member of a class designed to give special opportunity to those at a present disadvantage.

In one school an experiment was tried in which the retarded children were retained in the 'C' stream class appropriate to their chronological age. The classes were small, and the individual work of the special class was introduced. The three teachers concerned 'specialized' in certain subjects in each of the 'C' classes. The scheme was not a success. The boys who normally would have comprised the special class formed a very retarded minority in each class. Two-thirds of the class had mastered the elements in reading and number and were easier to teach in consequence. They produced more written work and claimed the teacher's attention to the detriment of the retarded boys. The remaining third of the class needed careful individual attention at a level of attainment with which the master was unfamiliar.

It is easier to organize instruction if seven boys are at the primer stage in a class of thirty than if there are only one or two boys as retarded as this. The selective special class allows for better grouping according to scholastic age. A child learns to evaluate himself from his own achievement as well as from the opinion of others. If he feels he is progressing and in doing so earns praise from his teacher, his period of 'segregation' in the special class is well worth while.

It would seem from experience that adolescent boys are more apt than girls to feel the isolation of the special class. This may be due to teaching-influence or to the greater susceptibility of the male sex to inferior status. Certainly boys display much more intellectual snobbery than girls, and the fault may lie in the haughty attitude of the boys in 'A' classes to their less gifted fellows. Ultimately it is the attitude of the staff to the various categories of intellectual ability which sets the tone of the school. Teachers are intelligent people whose natural impulse is not to suffer fools gladly. Until members of the teaching profession have learned to accept emotionally the limitations of unintelligent children they cannot enjoy the task of teaching them. The success of teaching must not be measured by results, but by a measure of attainment in relation to capacity. The border-line defective who leaves school with a reading age of 9+ years is worthy of praise, for he has used his one talent to great advantage. However, it is possible for a border-line defective with an I Q of 75 to achieve a reading-accuracy age of 13 to 14 years before leaving school if his visual memory is exceptionally good. His reading comprehension will approximate more to his mental age, for this is a more intelligent activity.

Another method which has been tried is that of allowing the special class to disperse at odd intervals—the third-year boys to join the third-year 'C' class for physical training and music when their lessons occur—the second-year boys doing the same. This leaves the teacher in charge of the special class with smaller numbers for certain intervals and enables more individual attention to be given to those remaining. Usually in an organization of this kind the time which should be given to cultural activities suited to these children's requirements is broken up to such a degree as seriously to limit its possibilities. However, the boys like joining the other classes where they can make contact with boys of their own age group in subjects where their inability to read and spell and do arithmetic will not be in evidence. The difficulty



of partially breaking up the class at a time when corporate project activity would be taking place should be avoided. The individual work in English and arithmetic could take place at those times, an extra lesson being inserted each week to make up for the time spent out of the classroom.

### CLASS RECORDS AND ORGANIZATION

It is possible to arouse much interest in self-achievement by plotting a class graph to show the reading and arithmetic ages of each individual. The children do not regard this form of class list as a comparative study—a ranking with some one at the top and some one at the bottom—but rather as a measure of their own individual achievement. When the new graph is added at the end of the year in a different colour they are interested to observe their own jump regardless of the comparative success or failure of others. They are also interested to see the climb their line has made on their own scholar's record card after a year's work. Graphical representation of scholastic results for the children's inspection has roused far more interest than competitive class lists, which are only a source of joy to the few scholars near the top and a source of despondency and feeling of failure to those near the bottom.

The two class graphs, one for reading and one for arithmetic, are very useful for quick reference by the teacher, if they are pinned up in the classroom. The children's names and intelligence quotients can be inserted along the bottom and the scholastic ages along the left-hand side. The children show little curiosity concerning the number (I.Q.) beside their name, and are quite incapable of understanding how a number could be a measure of how clever they are. If by any chance they should show curiosity they have merely to be told it is a score which they gained on a test, and a score as high as 70 pleases them. It is very useful to have quick access to a boy's scholastic age and I.Q. during a lesson. In a very short time the teacher memorizes each child's

I Q This is necessary if allowance is to be made for the children's innate limitation when assessing a rate of progress which can be expected within reason. In her instruction she will *give* the very dull the information, with the more intelligent she can leave them to find out, having provided the clues. She will rely more on the rote memory of the dull but employ the reasoning powers of the relatively more intelligent. For instance, the phonic building up of words with children of 70 to 85 I Q in the junior special class yields little return, but by the time they reach senior school age they are sufficiently mature intellectually to benefit by this approach.

It is advisable also to keep a record of the progress through the books in the order in which they are listed. The titles can be entered along the top of a sheet and the children's names down the left-hand margin. The date under the title and opposite the name will signify the satisfactory accomplishment of the book. A similar recording can be made for the arithmetic scheme.

Individual records of this kind are more essential where backward children are concerned than with those of normal attainment. However, the measures applied to the backward should be related to those for the more able if group organization is to be regarded as a whole. These remarks are particularly relevant where the method of tutorial groups is adopted. By this method, wholesale regrouping of the entire school is carried out for one or two subjects, either reading or arithmetic or both. This would mean that all members of the staff would teach these subjects at the same time each day and that each pupil would leave his chronological age group and join his scholastic age group. For the remainder of the time he would participate in lessons within his true age group.

This method of organization has its drawbacks, though there is no doubt that it avoids many of the disadvantages of other methods. The main disadvantage is when a member of the staff is absent for any length of time. In this event,

whoever takes over the class or group temporarily is faced for a short period each day with a loosely knit body of pupils having permanent connexions elsewhere in the school, and there is insufficient time to get to know the requirements of the pupils while they are in the tutorial groups. However, this does not happen when the head teacher is well acquainted with the method of organization of each group. This must, of necessity, be the stabilizing influence, and when it is present the absence of individual teachers is less hindrance to the success of the scheme.

The method of tutorial groups avoids the social segregation of the special class while at the same time allowing of its advantages in organization according to scholastic age. It does nevertheless mean that the relationship between teacher and pupil is less intimate. For the normal adolescent this is an aid to development, but for the backward, where immaturity and even neuroticism are found more frequently, a stable and more intimate relationship with a sympathetic adult is much more beneficial. This factor, provided the teacher has a vocation for this kind of work, could be regarded justifiably as a major determinant in deciding how the school should be organized. Each school will decide naturally on the grounds of current facilities.

### THE TEACHING OF ENGLISH

The reading age range in a senior school special class usually ranges from 4+ years to as much as 13 years. Most of the children are grouped at the 9-year level or below at the beginning of a new year.

Until a reading age of 7 years has been reached, it is necessary for the teacher to give personal supervision at frequent intervals. After that time, if the books are finely graded and selected, this will not be so necessary.

In senior schools it is difficult to find easy reading material which is suitable from the point of view of emotional interest. The children are usually somewhat immature in personality

development and not so critical as more intelligent children, and so the problem is not so acute as it would seem at first

### READING ACCURACY AGE GROUPS

*218 Senior Special Class Children*

Reading Age in Years	4+	5+	6+	7+	8+	9+	10+	11+	12+
Approximate percentage of children	1	5	7	12	20	19	17	12	7
Possible numbers in class of 30	?	1	2	4	6	6	5	4	2

The following reading books, classified in terms of scores in Burt's Reading Accuracy Test, are recommended for use in senior school special classes

### READING AGES 7 YEARS AND BELOW

#### Stage I

- The Duncan Readers* (Book I) Harrap
- The Crump Family*, Highfield, H Nelson
- The Crump Family Work Book*, Highfield, M E Nelson.
- The First School Story Book*, Highfield, H Nelson
- The First English Work Book*, Highfield, H Nelson
- The Speedwell Book*, Hume and Wheeler Cassell
- The New Vista Readers* (Book I), Warmington Schofield and Sims

#### Stage II

Blackie's "Easy to Read" Books <sup>1</sup>

- The Golden Cobbler*
- The Magic Duck*
- The Three Silver Pennies*
- The Wizard's Chair*
- The Golden Mill*
- The New Vista Reader* (Book II)

<sup>1</sup> Questions set on these books are given in the Appendix

## READING AGES 8+ YEARS

"The Land of Youth" Series. Nisbet <sup>1</sup>

*The Secret Name*

*Grunling the Dwarf*

*The Man who sold his Heart*

*The Poppy, the Lily, and the Rose*

*The King of the Black Mountains*

*Bright Story Readers* (Grade P)

*The Seven Sons* (Strang's Penny Series)

*The Red Candle* (Strang's Penny Series)

*The Duncan Readers* (Book II)

## READING AGES 9-11+ YEARS

## Stage III

*The Duncan Readers* (Book III)

*Beacon Study Readers* (Books I, II, and III) Ginn.

*Golden Journeys* (Story and Study) MacDougall

*Famous Fables* Nelson

*Read, Laugh, and Learn* (Book I) Grant Educational Co

*Happy Traveller Readers* (Book I)

*Setting Out* (Girls)

*The Broad Highway* (Boys) } Blackie

*Stories from Everywhere*, Rhoda Power Evans

*Pictorial Atlas of the World* Philip

*The New Vista Readers* (Book III)

*Bright Story Readers* (Grade I)

*Thrillers* (First and Second Series). Nelson

## FIRST STAGE

A number of books have been listed as suitable for reading ages 7 years and below. Some or all of these could be read in turn according to the rate of progress. However, no pupil with reading ages as low as this could fail to benefit by reading them all in the order listed. This would ensure that the basic vocabulary of reading would be well established.

<sup>1</sup> Questions set on these books are given in the Appendix.

Book I of the *Duncan Readers* is excellent as a first step with a new group because of the help afforded by the illustrations.

The Highfield books form a series of four which can be taken in sequence. *The Crump Family* introduces the vocabulary basic to *The First School Story Book*, while *The Crump Family Work Book* provides exercises as the pupil moves through the reader. *The First English Work Book* is a sequel to *The First School Story Book*, and provides both reading and written experience around its vocabulary.

*The Speedwell Book* was the pioneer contribution of this group, and could be a first reader for children with reading ages just above 7 years. It is very well planned and ingenious, yet appropriate in the activities it suggests.

*The New Vista Reader* (Book I) is eminently suited to complete this selection.

At this first stage children need to be taught sentence by sentence, with ready prompting when a word is forgotten. Study of the new words when they are introduced can be made through discussion of their meaning, their phonic structure (when suitable), and by flash-cards. The flash-cards are quickly made and can be retained for future use. The letters would need to be from three-quarters to an inch in height. Having discussed the new word printed on the board, and having asked the pupils to contribute statements containing the word, it can be erased and then exposed for three seconds by means of the flash-card before the group attempts to write it from memory. This method of short exposure assists the lethargic and distractible and those handicapped by left ocular dominance to focus steadily and more efficiently. It is relatively unimportant that the new word may be forgotten by the next day. The value of such an exercise lies in the fact that new habits of attention are being developed which will bring their reward later.

Other means of getting to know the words are demonstrated in the text of the books listed, and these ideas should be used freely to supplement the exercises already mentioned.

At this stage the emphasis is on group instruction followed

by individual attempts at exercises, but, once this stage is passed successfully, silent and individual reading is more possible

## SECOND STAGE

Blackie's "Easy to Read" Books are surprisingly mature in content considering they were formerly known as Blackie's *Infant Readers*. There has been no evidence of a negative attitude from the children when asked to read them. If attention is concentrated on the idea of improving reading ability, that becomes the chief motivation to endeavour. In any case the children have not yet reached a degree of fluency which will enable them to read entirely for content regardless of the business of working out the phrases. The books are read silently. The child appeals to the teacher whenever a word is unknown. On these occasions—if the word is amenable to phonic analysis—it can be worked out with him. This amount of phonic training is usually sufficient with retarded seniors rather than long phonic repetitions giving practice in certain combinations. The duller children tend to become very confused with this kind of instruction. If the unknown word is not amenable to easy phonic analysis, at least the first letter will be. To train the child to sound the first letter only will help him towards making a guess at the word from the context of the sentence. If it is a busy moment for the teacher it is sufficient just to say the word.

About six questions of a very simple nature, each of which can be answered in a single sentence and by direct reference to the book, are given to the child when the book is completed.

These answers should be first tried out by the child. If necessary he may refer to the reading book for spelling and even for accuracy of answer. Jotting-books and pencils can be used for the try-out. The work is then corrected by the teacher when the child presents it. From all points of view, it would seem advantageous at this stage simply to correct for the child rather than say, "This and this is wrong, go and

put it right." When the sentences are corrected for spelling and sentence-formation, a fair copy can be made under a heading provided by the title of the reading book and the date. This can be done in ink in the English exercise book. Thus an individual record of reading is kept with the rate of progress.

It is helpful if at the conclusion of each book the child reads a paragraph aloud to the teacher before going on to the next book. Until a reading age of 8 years is reached some reading aloud is necessary.

This method will give the maximum help with written work at a time when it presents the greatest difficulty.

Instruction in handwriting can be given individually and incidentally during the marking of these exercises, one or two words being selected which contain demonstrations of the child's inability to form certain letters. This is of far greater benefit than wearisome copying from the blackboard in handwriting lessons. These latter have their place, but it would seem that one twenty-minutes' lesson a week for formal handwriting is adequate.

Until a reading age of 9 years is reached, this method of reading short books and answering questions afterwards is observed. There is intensive reading and little writing. Progress after a reading age of 8 years is reached is comparatively rapid, for there is then sufficient background of vocabulary to ensure that new words occur in the text less frequently and to enable much greater help to be derived from content.

### THIRD STAGE

Books for children with reading ages of 9+ onward fall into three groups: those consisting of one long narrative, those informative in nature and divided up into shorter sections, and those consisting of a collection of short narratives. The second and third kinds would seem to yield best results with retarded children. Such books are set out in graded difficulty under the 9+ reading-age list. Working



through these will often bring a boy's reading age up to 13+ years

The method adopted with the 9+ reading-age group differs from that employed for the lower reading ages. It is necessary to have about three copies of each book, which are set out on a table at the beginning of the lesson. The work to be done is printed on cards for the children's use. Card I is given to a child when he attains a reading age of 9 years. On it will be a reference to various books, each of which he will deal with in turn. The first section of work will refer him to a book and tell him which page to find and which pages to read—three or four pages at the most. When he has completed his reading he will answer the two or three questions which follow on the card. These questions have been so designed as to minimize the abstract and emphasize the concrete. They do not make too much demand on the reasoning ability, but do test reading comprehension in a direct manner.<sup>1</sup> (Many of these books have questions printed in them, but in some cases these are unsuitable for special-class children, although they might be useful for the higher standard obtaining in a 'C' class in a three-stream school.)

When the questions have been satisfactorily answered in a written form the next section of work indicated on the card is undertaken. In this manner the child works through card after card.

This method allows of the more definite dividing of the work into a progression of separate units, while material in the books which is unsuitable can be left out. Dividing the work into units in this manner helps the teacher to keep a check on the progress of the child. In addition, it allows of a wider variety in literature sufficient to keep the whole class occupied simultaneously. If there are three of each set, it is unlikely that more than three children will want the same book at once. (Of all the books listed on pp. 91-92, the only books which need to be purchased in larger numbers

<sup>1</sup> The questions in the Appendix are intended to facilitate beginning a scheme of this kind.

are those for Stage I. Usually a dozen of each of these are necessary to ensure sufficiency at the beginning of each year.)

This work occupies one hour every day, with the exception of the day spent at domestic or manual training. Other forms of English instruction such as practice in letter-writing, in handwriting, and in the reading aloud to the class by the teacher and better readers, should be done at some other time. Composition lessons other than such exercises as the writing of simple letters will be rendered less necessary by the adoption of the English individual scheme. If there is to be a marked rise in the reading-age graph at the end of the year, at least four hours each week must be devoted to individual work in English. Its aim is to create the facile reader who reads for pleasure. Quite dull people can read for pleasure if they have been trained sufficiently.

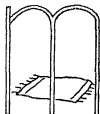
The children need the personal encouragement of the teacher as they progress from step to step. If they feel he or she is interested in their progress that will be sufficient encouragement and spur to endeavour.

### PHONIC PRACTICE

Although most children will reach the senior school with some phonic facility, a thorough revision of the simple phonics will be necessary. As the new class will begin in the term which ends at Christmas, the learning and revision of the phonic interpretation of the alphabet can be done chiefly as a handwork and art activity. This will lend dignity to an activity which is usually associated with the infant departments.

It can be proposed that a child's decorated alphabet book, such as is sold at Christmas, should be made. This will involve the drawing of pictures and large letters and the words which symbolize the picture. The lettering is done on half-inch squared paper and is copied from the teacher's large drawing, also planned on squares. The letter can frame

the object of which it is the initial letter. Coloured pencils will give adequate colouring. The complete word will be in close juxtaposition. As each letter is completed, the



MAT

technique of teaching it to a small child should be mastered. The children can be told that the old-fashioned way to teach sounds was to say "ber-a-ter—bat." Now we say "ba-t." The pupils can try to sound the end letter without voicing it. The teacher can challenge various children to make the sound for which 't' stands. They are sure to say 'ter'.

This can be done with the twenty-five small letters. Usually the capitals will be associated already with these from previous experience.

Printing will be needed in all project work, since the application of these lessons confines written work to labelling with short phrases. Such an exercise as simple lettering and illustration is a good introductory practice to this.

The pages, when complete, can be bound and the cover designed with a simple all-over pattern.

The printing will be best done in pencil and then inked over with ordinary nibs. Lettering-nibs would present an additional technical difficulty.

In addition to this the children can begin the construction of their own dictionary under alphabetic arrangement and classified according to a prearranged code. Headings for such classifications could be ships, aeroplanes, road-traffic, animals, jobs, other countries. One topic per month will suffice. The boys could make a practice of entering two or three words while the register is being marked. This was run as a handicap competition in one class according to the initial reading level of each child. No help was given by the teacher, but the books were rapidly inspected once a week to ensure that each child had added some words, and suitable encouragement was given. In the case of incorrect spelling, warning

should be given but no help. The spelling must be correct if the word is to score a mark

These topical vocabulary dictionaries can be maintained throughout the year as a valuable aid to increased word-recognition

The next phonic problem will be long and short vowels and the diphthongs. The following exercise illustrates a method of teaching these by means of daily lessons of ten minutes, during which discussion, demonstration, and practice can take place. Suppose the diphthong 'ou,' 'ow,' is to be taught. The children can be told that the sound for this week is 'ou,' sometimes spelt 'ow.' Then some easy examples such as 'now,' 'row,' 'cow,' 'sow' can be printed on the blackboard. Ensure that these are recognized by drill. "Show me 'cow.' Who can spell 'now'?" Which one means a noise? Which one has horns?" etc.

Then ask the children to write the four words across one line near the top of the space in their writing-books

Then print on the board some sentences which need to be completed by one of the four words, thus

NOW   ROW   COW   SOW  
I am not making a ——  
I am writing ——  
The —— gives us milk  
The —— has ten babies

The children read these sentences aloud, still leaving blanks. Then the completed sentences are written in their exercise books. The books can be marked as the children finish. This can be repeated for the following groups of words

Loud, crowd  
Out, shout, about, pout  
Mouse, house, louse, grouse  
Owl, howl, growl  
Pound, round, sound  
Found, bound, hound  
Wound, ground

Exercise on this sound combination would last approximately two weeks. A last revision exercise could be given in the form of simple rhymes thus:

I am going now  
 To milk the c——  
 If you hit the sow  
 There will be a r——  
 The hungry wolf will howl  
 The angry bear will gr——  
 When the clock is wound  
 The ticks will s——  
 If you drop a pound  
 It will fall to the gr——  
 I will look all round  
 Until the penny is f——  
 They are shouting out loud!  
 Just look at the cr——!  
 This is the mouse  
 That lived in Jack's h——

No help or preparation need be given to this except on request from boys with very low reading ages.

This is departing from the principle of individual work, but phonic practice must be given orally and it is therefore necessary to make it a class exercise.

The sentences must in every case give an obvious clue to the word to be supplied and the general vocabulary confined to easier words. Of all the words in the rhyming sentences given above only 'hungry' and 'angry' need to be taught to children with reading age of 7+ years.

Other phonic units which can be so treated are 'oi,' 'oo,' 'oa,' 'ai,' 'ea,' 'ie,' the long and short vowels, the former with their terminal 'e,' the latter with double consonant.

It might profitably be added that it is useless to give rules for spelling to dull children. Only the more intelligent can profit by knowing that 'e' at the end makes the vowel long, and "a short vowel is succeeded by a double consonant in a two-syllabled word." Dull children learn best by concrete

exemplification with some technique such as sentence-completion to compel added attention through selection for context.

The following sketches contain ideas that will prove helpful when alphabet books or books of any kind are being constructed. The technique is simple yet attractive and well within the scope of the senior school special class child. The teacher in whose class these methods were tried out has found *Art and Craft Education*, a monthly magazine published by Evans, of great help. In the senior school the boys can make their own templates in thick paper or thin cardboard after the first effort at drawing the figure is complete.

## ZIGZAG BOOKLETS WITH SHAPED COVERS



Strip of thin paper folded seven times

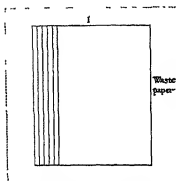


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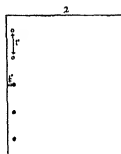
*Suggested Covers*



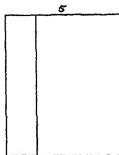
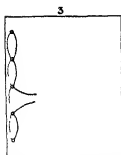
## BOOKLET WITH STAB-STITCHING



Sheets fanned out and pasted



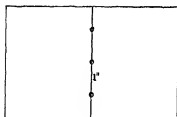
Knocked together, five holes pierced with bradawl or compass point



4 Shield made of manila paper or binding cloth folded—pasted and slipped on Put under pressure

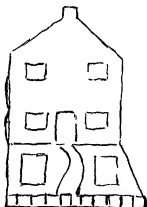


## HOUSE AND GARDEN COVER

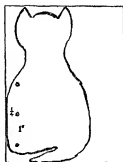
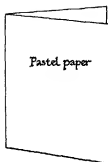


Folded pastel sheet at bottom and  
three folded white sheets on top

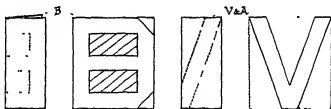
Three-hole stitching is made, needle  
going from front to back



Door, windows, path, and flower-beds can be stuck on  
with coloured paper or done with paint



## PICTORIAL ALPHABET DECORATION



Cut letters from folded rectangle of paper

- A for anchor
- B for butterfly
- C for crown
- D for diamond
- E for elephant, etc

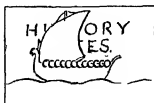
The objects and animals for which the letters stand should be traced round templates on coloured paper and cut out. Letter and object (or animal) should be arranged on square of coloured paper and then stuck down. The three colours can be made to harmonize or contrast.

## CUT PAPER FOR NOTE-BOOKS



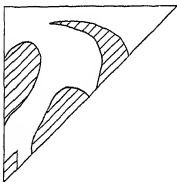
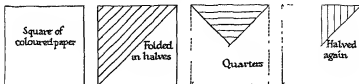
Book-cover should be squared up and leaf design repeated by use of stencil

## HISTORY NOTE-BOOKS



# SOME COVER DECORATIONS

Cut paper pattern

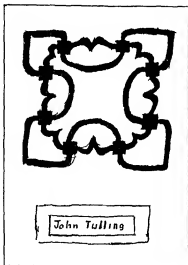


Shaded portions to be cut away  
and design opened out  
*No cuts should be made from top edge*





Start with unit in the middle Draw in straps to the edges *but not* the top edge  
Cut away shaded portion and open up the design



## SUBJECTS IN SENIOR SCHOOLS

of history, geography, natural history, music, drama are the important aspects of cultural life which make for broadened sympathies and a better understanding of society beyond the child's own experiences. These subjects provide opportunity for release through self-expression in an artistic medium. Sentiments may seem to have little relation to the child when the level of their intelligence quotients is low, but it is possible for very dull children to be emotionally and to be happily self-expressive, if the intellectual content of the medium used is simple. The border-line defective is capable of directed activity. He is able to become engaged in an environment which lacks appropriate stimulus. And, when pupils of a lively disposition are present, their capacity for surreptitious diversion is great.

Such behaviour may range from retreat to screaming to release of tension in rebellion in varying ways.

In the first hand, it is a very simple matter to bring the child to a state of mind in the average special class and immediately to optimistic appraisement and will double their assimilation of knowledge of endeavour under such conditions. Appraisement is pathetically obvious. A constant appreciation by their class teachers will work wonders with their rate of

spontaneous expression which is elicited in the activities referred to above will be the measure of the progress of the class. It will be a sphere of interest not necessary for the child to be informed of what is wrong, as is the case in English, or in work. It will be rather, "Don't you see an improvement?" The teacher develops

what the child suggests in his first effort. Children love this appreciative co-operation of the teacher in their efforts at dramatization or drawing. It makes them think their first idea or effort is really worth while if development of it is suggested by their teacher. They respond gladly. But there is a feeling of defeat if they are told, "No, don't do it in that way, but in this." It is always safe to assume with children of retarded development that the work they produce is the best of which they are capable. Destructive criticism sends them in upon themselves, and they cease to be outgoing and to desire to achieve. Self-doubt and lack of confidence can be set up with a glance or a tone of voice. They are, on the whole, incapable of assessing their work critically, and rely for that assessment on the opinion of some one they respect. A sense of failure and inferiority saps the productivity of even brilliant people.

In order that these conditions may be rendered possible, it is necessary for the teacher to set a standard in his or her mind which will not cause the impossible to be expected, yet which will exercise the powers of the children to a satisfactory degree.

The choice of theme need present little difficulty to the experienced teacher. It must be such as to make an appeal to the adolescent's interests, and it must not imply too much background of present knowledge. Every theme chosen should begin from some point in the pupils' present body of knowledge. Any common object of everyday experience opens up good possibilities for a subject which can embrace all the cultural activities for a team—chairs, tables, trees, houses, implements of all kinds, fairy stories, modes of transport, pottery, animals, folk tales, food, cooking, rings, the stars, sports. All these things can form the point of departure for a project of vital interest to rather dull adolescent boys and girls. At the end of this chapter are set out some projects which have been developed with children of special classes in this way.

If a subject is selected at random—say, 'Trees'—what



## PROJECTS IN SENIOR SCHOOLS

The teaching of history, geography, natural history, music, literature, and drama are the important aspects of cultural education which make for broadened sympathies and a quickened understanding of society beyond the child's immediate confines. These subjects provide opportunity for emotional release through self-expression in an artistic medium. Such sentiments may seem to have little relation to these children when the level of their intelligence quotients is considered, but it is possible for very dull children to appreciate emotionally and to be happily self-expressive, provided that the intellectual content of the medium used is not too complex. The border-line defective is capable of lively, self-directed activity. He is liable to become apathetic when an environment lacks appropriate stimulus. On the other hand, when pupils of a lively disposition are bored in class their capacity for surreptitious diversion is annoyingly wide. Such behaviour may range from retreat into sullen day-dreaming to release of tension in rebellion against authority in varying ways.

On the other hand, it is a very simple matter to bring about an elated state of mind in the average special class child. They respond immediately to optimistic appraisalment from the teacher and will double their assimilation of knowledge and degree of endeavour under such conditions. Their need for appraisalment is pathetically obvious. A sincere and consistent appreciation by their class teachers and head teacher will work wonders with their rate of progress.

The degree of spontaneous expression which is elicited in the cultural activities referred to above will be the measure of the emotional tone of the class. It will be a sphere of instruction where it is not necessary for the child to be informed that this is right and that is wrong, as is the case in English, arithmetic, and handwork. It will be rather, "Don't you think this would be an improvement?" The teacher develops

what the child suggests in his first effort. Children love this appreciative co-operation of the teacher in their efforts at dramatization or drawing. It makes them think their first idea or effort is really worth while if development of it is suggested by their teacher. They respond gladly. But there is a feeling of defeat if they are told, "No, don't do it in that way, but in this." It is always safe to assume with children of retarded development that the work they produce is the best of which they are capable. Destructive criticism sends them in upon themselves, and they cease to be outgoing and to desire to achieve. Self-doubt and lack of confidence can be set up with a glance or a tone of voice. They are, on the whole, incapable of assessing their work critically, and rely for that assessment on the opinion of some one they respect. A sense of failure and inferiority saps the productivity of even brilliant people.

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If a subject is selected at random—say, 'Trees'—what

possibilities lie in this? Immediately the historical aspect springs to mind—words such as palisades, forests, hunting, rafts, primitive dependence on fire, trees used as rollers in the construction of Stonehenge, charcoal burners before coal mining, primeval forests of carboniferous period, houses, the roof tree. This alone is material for the history lessons for a whole term. Trees are interesting objects for nature study as they are so massive and obvious and catch the child's interest because of their emotional significance in his early life. Horse chestnuts are easy to grow in the classroom or the school garden. One can be unearthed in the spring when it is just beginning to germinate.

The plant can be watched throughout its development during the summer. The children can be told how many years they must wait before they can hope to play 'conqueror' from its fruiting. In addition to such close observation the seasonal cycle of deciduous trees can be observed. The common trees, ash, elm, oak, poplar, lime, birch, willow, can be identified at their most characteristic periods—for example, the willow in full leaf, the elm in faint spring green, the ash in fruit, the lime in flower. This will call for nature expeditions to the growing objects to experience them at first hand.

The significance of the grain in wood—the tree-trunk rings—can be pointed out. All these simple facts are comprehensible even to the border-line defective if his interest is caught.

Geographically the tree theme can be used to refer to the more remote parts of the earth. On a blank map of the world trees characteristic of the varying climatic belts can be shown: the giant mahogany, ebony, and rubber trees of the hot belts, the conifers and deciduous trees of the temperate zone, lumbering in Canada, wood-pulp, and the power-driven mills leading to newspapers. The relation of trees to man can be shown simply in all these lessons.

If all this is done, what educational process has taken place? Just this—that the word 'tree' is now a richer con-

cept in the minds of the children. The word now has more meaning for him in a way which is related to his own life-experience. Objects which he had taken for granted and had not even bothered to differentiate between will now be identified as individuals with special characteristics. As a result of this increase in understanding he will be a more cultured person, which in psychological terms means a more secure person. The dissipation of ignorance is one of the major factors in establishing stability of character.

So far, the kind of information to be taught has been discussed. With retarded children the way in which it is taught and applied needs careful consideration. In an hour's lesson only fifteen to twenty minutes should be spent in exposition by the teacher. This should take the form of a simple narration of facts illustrated by quick blackboard sketches or pictures or models. The remainder of the hour should be spent in application of the lesson—either modelling in Plasticine or illustrating in pencil or pen-and-ink sketches the salient feature of the lesson. The whole can be rounded off by the printing of a short caption expressing the gist of what the picture illustrates. The teacher provides the copy for this application. An example of this can be seen in the project on transport given at the end of this chapter.

Retarded children can take in fewer facts than brighter ones and need longer to assimilate them. The actual verbal part should therefore be reduced to a minimum, written language even to one sentence per lesson, while the concrete application occupies most of the period.

Some pictures lend themselves to cut-out effects—for example, where there is an irregular skyline or where the group of objects forms an integrated whole, such as men on a horse. The boys derive satisfaction from mounting their drawings when cut out on black backgrounds, and a book for this purpose can be prepared from black paper. The sentence summing up the lesson can be printed in white pencil underneath. Illustrations gathered from other

sources can be pasted in too. The whole when complete would form a 'tree book' or a 'transport book'. This departure from the usual exercise book adds incentive in giving novelty of effect.

More permanent models in papier mâché and wood can be constructed as a collective class effort but should not take up too much time in any one week. Permanent use can be made of these models. If a large model of the Thames estuary in connexion with a project on shipping is made it can be used subsequently as a number game with dice. A series of numbers can be pasted on connecting the various ports, shallows, etc.—for example, *Gravesend, collision with ferry. Go back to Woolwich for repairs. Tower Bridge—not open. Wait three turns. Purfleet—tide favourable. Take two turns.* Another instance is furnished by a relief model illustrating methods of overcoming contour in transport—tunnelling, funicular, cuttings, etc. This provides an excellent foundation for a similar number game. This is mentioned because to undertake the construction of larger, more permanent models is extremely valuable as an illustration, but involves the expenditure of additional teaching energy. This is more justified if afterwards the model can be used for a good purpose. For the purposes of illustration and application the children's individual efforts lesson by lesson are of far greater importance.

Collecting of pictures from external sources to form a book round a theme does not seem an activity so worth while in the case of special class children. Their power of selection and gaining access to sources is limited to such an extent that little advantage is reaped. They seem to need direction in these activities. The more intelligent children, retarded for reasons other than innate dullness, can be encouraged to do this as a purely individual effort with benefit.

To sum up, it might be said that for children who are sufficiently retarded to need education in a specially selective class the verbal content of lessons must be limited to the necessary minimum. This does not mean that any oral

contribution by the children should be disregarded on those occasions when it will be spontaneously offered in such lessons.

### DRAMATIC LESSONS IN SENIOR SCHOOLS

Spontaneity of verbal expression can be trained and encouraged in the drama lessons. For all special class children it is so much waste of time to set them to learn parts of a previously composed play, because of their inability to read fluently and the difficulty they will have in interpreting the dramatic significance of the words. Dramatic periods should be round stories and long narrative poems. Glove puppetry is a good introduction to such lessons. The children are quite capable of originating their own words and movements and should be left to practise this in sets of three or four. Eight improvised puppet theatres are necessary for this if real benefit is to be derived. The class can prepare their plays, with three or four children in each group. As each group is ready it can volunteer to act to the remainder. A whole afternoon is necessary for such a lesson, and the teacher must be prepared for much bustle, movement, and noise. There will be scenery to prepare and the play to rehearse before the break, when the children return to the classroom and the formal presentation by each group can take place. It will be necessary in selecting groups to distribute the better I.Q.'s to the greatest advantage.

The teacher need take no active part during this period beyond offering incidental suggestions by way of encouragement. If puppetry is to be of real value, this method of enabling all the children to be active at once is a necessity. The theatres for group use need not be so well equipped as the main one for demonstration purposes. A design for a theatre for dangling puppets was shown in the junior school section. In the Secondary School, it is important that each pair of pupils should possess their own set of glove puppets with which to practise.

In telling the story which is to be eventually dramatized

the teacher should use the form of direct report when narrating conversation and bear in mind the dramatic form it will be resolved into. She can thus indirectly suggest the speech and grouping in scenes.

Much drawing and handwork can arise out of the needs for puppet stage-properties.

These activities will constitute for the pupils practice leading to the production of plays on a larger scale with themselves as actors.

Puppetry enables children to project or objectify the characters of the play—their motivation and reactions. They visualize them as symbols outside themselves which they can control. This renders creative dramatic activity easier, and when they themselves come to act it will seem to them that their puppets have taught them what to say and how to move.

#### SOME PROJECTS WHICH HAVE BEEN TRIED OUT AND FOUND SUCCESSFUL

**For Girls**—*The Willow Pattern Plate* (Westborough Senior Girls' School—Director, Miss N V Macintosh, B.A.)

The story of the Willow Pattern Plate is set out admirably in a volume of the St George's Series, published by Alexander Moring, Ltd. Material was gathered also from Honey's *English Pottery and Porcelain* (Black).

#### *The Development of the Project*

- |   |                   |                                                                                                                                             |
|---|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| A | <i>Literature</i> | The story and its dramatization<br>Willow Pattern rhymes<br>Chinese poems and stories                                                       |
| B | <i>Geography</i>  | The potteries in England<br>The potter's craft                                                                                              |
| C | <i>History</i>    | The Chinese ancient civilization<br>Marco Polo's adventure (several lessons)—the Great Wall—the days of the gorgeous East—present-day China |

- D *Craft* Preparation of books for Chinese anthology  
*Needlework*—Kimonos in white and blue Winceyette decorated with motifs from Willow Pattern design as repetitive patterns round sleeve border and round neck and front and hems (used in production of play and afterwards sold as dressing-gowns)  
 A Willow Pattern rug  
 Table runners, aprons, and feeders, all embroidery designs based on Willow Pattern
- Nature Study* Observations of young willow-, almond-, apple-trees planted in school garden during the autumn

It need not be mentioned, perhaps, that the *Children's Encyclopædia* will give much material for these lessons

*A Scottish Project* (By Miss N. V. Macintosh) Reference books for Clans and Highland Dress *The Scottish Clans and their Tartans* and *The Scottish Tartans*, both published by W. and A. K. Johnston, Ltd

Tartan paper for decorated book-covers can be obtained from W. Straker, Ltd, London.

### *The Development of the Project*

- A *Literature* The numerous Scottish poems and ballads
- B *Music and Dancing* Highland fling and Scottish reels Scottish songs
- C *Geography and History* The Highlands and their past and present significance to the people of England in the past the stronghold of nationality, wild and lawless, now the haunt of the salmon-fisher, the deer-stalker, and those who love quiet and peace and nature—a holiday resort for the sportsman  
 The Clyde-Glasgow region where most Scots people live  
 Engineering and shipbuilding Compare the crofter with the industrial worker What is happening to the crofter? Compare traditional Highland dress with everyday dress of a man of Glasgow How much it is worn now Its significance and composition



# UNITS FOR CROSS-STITCH DECORATION

Bird



Willow tree



Apple tree

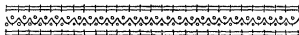
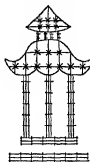
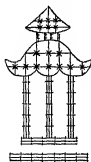


Bridge



Pagoda

## DESIGN FOR END OF RUNNER



*Needlework* Dressing of dolls in Highland dress Patterns of garments to be cut out in paper and drafted into needle-work book

<i>Items</i> White undergarment	Black velvet coat
Kilt	Sporran
White blouse	Plaid
Lace ruffle	Socks and shoes

#### Glengarry

Giving practice in hemming, pleating, gathers, French seam, knitting, over-sewing and back stitching, run and fell seam, loop and button, tapes, hook and eye, press fastening

#### *Art and Craft Work*

Making of tartan rug (Macintosh tartan chosen )  
Tea-cosy and kettle-holder in tartan (holder in form of glengarry)  
Feeders decorated with thistles, etc

#### *Dramatization*

'Scenes from *Wee MacGregor*

A coloured picture of Wee MacGregor with a tartan scarf the colour of the house to which child belonged decorated the outside of exercise books

In projects of these kinds which embrace most of the time of the children, apart from that spent in English and arithmetic, there is little need to differentiate between the periods devoted to the specific subjects in the afternoons. Long periods can be devoted profitably to any activity which has caught the interest of the class. One week the historical aspect will be enhanced—perhaps for several weeks. With retarded children too much mixture makes for confusion. If the potteries are dealt with during the same time-interval as the adventures of Marco Polo, Staffordshire may be located in far Cathay in their later stores of knowledge. This fact constitutes the advantage of concentrating on differing aspects of the project at successive stages in the year rather than running them concurrently

**For Boys**—*History of Transport* This theme is hackneyed, but its method of treatment need not be so.

The application of these lessons throughout were sketches copied from large illustrations made by boys gifted at drawing in the 'A' classes. The boys made their own time-charts in book form. Large sheets of black paper were folded to form a book about the size of an ordinary school atlas. The drawings were stuck in these in their chronological order. Along the wall a strip of black paper 1 ft 6 in  $\times$  8 ft was pinned to form a time-chart similar to the boys', on which good (not always the best) individual efforts could be pasted.

About eight events indicative of progress were selected, and these formed the basis of the term's work. The first drawing indicated the state of the roads before Macadam began his work—it was a picture of Dr Foster (who 'went to Gloucester') falling into a puddle right up to his middle, his arms flung above his head, his umbrella and doctor's bag hurtling through the air. In this lesson the danger of roads with deep holes and ruts to pedestrians and wheeled traffic was pointed out. Underneath the drawing was printed "Before 1815 the roads were like this." This amount of written expression is all that is advisable, for the class contained at least ten boys with reading ages of 7 years or less.

The second picture was one of a man standing by the roadside beside a pile of stones, grasping a hammer in one hand and pointing with the other to his wide-open capacious mouth. A gentleman in the dress of the early nineteenth century is turned towards him. From the gentleman's mouth a balloon announces that he is saying, "I told you to make the stones small enough to go into your mouth." This is Macadam upbraiding a stone-breaker for not breaking the stone into small enough pieces, while the stone-breaker is revealing by the size of his toothless mouth that his work is in accordance with regulations. It illustrates the new principle of road-making which was described by the teacher. Underneath was written "1815—Macadam makes better roads."

Each of these drawings was originated by a boy in the school after an explanation by the class teacher of the special

class. The remainder were suggested by existent illustrations. There were the stage-wagon, the stage-coach, James Watt riding to London—a pillion passenger on a horse—Stephenson's "Rocket," a more modern engine, and a sketch of one of the latest streamlined locomotives. Throughout the course it was the effect of improved travel on the lives of the man in the street which was stressed. The times taken



1815—MACADAM MAKES BETTER ROADS

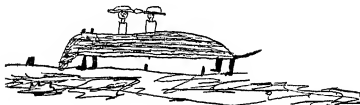
over the journey between Southend and London were compared at each stage. The use of inns with stabling—an inn-licence was granted only to houses where there was accommodation for man and beast—the frequency of highway robbery, and such incidentals were introduced. 1815 and 1837 were the only dates mentioned.

The boys were very well pleased with their efforts at illustration. When the pencilled effort was approved, they inked the outline and cut out the drawing, pasting it on the black

background—one drawing per page. The caption underneath was treated as an exercise in printing. Some of the drawings were amusing caricatures of the originals, but, provided the teacher regarded them with respect, the boys were content. In these lessons the emotional acceptance of their work is necessary, otherwise its function as a mnemonic fails to operate.

It need not be stressed that the children's own efforts at reproduction are of vastly greater educative value than the colouring, etc., of copies duplicated by the teacher.

Drawing by boy, aged 11 years (I.Q. 70)



JAMES WAT TRIDESTO LONDON

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- ALEXANDER, W P *Educational Needs of Democracy* (U L P)  
 BURT, C L *The Backward Child* (U L P)  
 BURT, C L *The Sub-normal Mind* (U L P)  
 FLEMING, C M *Adolescence Its Social Psychology* (Routledge and Kegan Paul)  
 HEMMING, J *Teach Them to Live* (Heinemann)  
 WALL, W D *The Adolescent Child* (Methuen)  
 WHEELER, O, *The Adventure of Youth* (U L P)

## CHAPTER VII

### ARITHMETIC IN JUNIOR AND SENIOR SPECIAL CLASSES

THE arithmetic ages of children in junior special classes at the beginning of the year lie for the most part round the 7+ and 8+ year levels, in senior schools round the 8+ and 9+ levels, measured by the Revised Southend Attainment Test in Mechanical Arithmetic. Approximately 50 per cent. of the children in junior classes will need the course of instruction which is commonly taught in the last year in the infant schools, while those in senior special classes will need for the most part the course for junior schools. Statistics of arithmetic ages obtained in special classes in September 1938 showed the following percentages at the various age levels

PERCENTAGES OF CHILDREN AT VARYING ARITHMETIC LEVELS IN  
SOME JUNIOR AND SENIOR SPECIAL CLASSES 221 JUNIORS,  
218 SENIORS

*September 1938*

Arithmetic Age in Years <sup>1</sup>	7- 7 6	7 7- 8 5	8 6- 9 5	9 6- 10 5	10 6 and over
Juniors	53%	33%	10%	4%	
Seniors	7%	20%	40%	24%	9%

<sup>1</sup> These arithmetic ages are those for the Revised Southend Arithmetic Test

The organization of an individual method of instruction in number took place in three stages.

The first stage dealt with the means of diagnosis, and the test which was constructed for this purpose has been revised recently. The test, of course, gives the attainment age-levels of a child who has progressed normally. The arithmetic age of any child will indicate which of these processes he has mastered and those which he cannot yet do. It has been emphasized that a method of diagnosis which has no counterpart in remedy is almost valueless to the teacher of a class of thirty children. Accordingly the next stages of organization involved the gathering together of apparatus, text-books, and sum cards which were necessary to teach children of varying arithmetic ages.

The second stage of this work took the form of a display of arithmetic apparatus, text-books, and number games suitable for the instruction of retarded children. Most of this was gathered from the infant departments. The psychologist visited each school in turn, making a selection to avoid duplication. The material was set out on long tables in progressive stages and labelled according to the arithmetic age for which they were suitable. The exhibition was open to the teachers for a week. At the end of this time the three research committees met and made a selection for a sample requisition list considered suitable for junior and senior special classes. As far as possible published material was selected, but selection was also made from original sources where these were considered of high value. Most of the original contributions were fashioned in wood, and arrangements were made for these to be reproduced at cost price by the carpenter at the borough depot.

The third stage was undertaken by the psychologist, who drew up requisition lists which would be necessary for classes beginning to organize work in number. The published material and its allocation to arithmetic age year-levels can be summarized as follows:

ARITHMETIC AGES 7 AND BELOW (Junior School only)<sup>1</sup>

Establishment of number concepts, composition of number  
Introduction to four rules in length and money.

Monteith's *Welbent Scheme of Individual Work in Number*  
(Arnold)

Stage I	Steps 1, 2, 3, 4
Stage II	Steps 1, 2, 3, 4
Stage III	Step 9
Stage IV	Steps 1, 2, 3, 8, 10
Stage V	Steps 4, 8, 9, 12

Larcombe's *Arithmetic Cards for the Very Young*, Grade II  
(Evans)

## ARITHMETIC AGES 6 5-7 (Seniors and Juniors)

Establishment of addition with carrying-figure.

*Arithmetic Cards for the Very Young*, Grade III  
*Welbent Practice Arithmetics*, Book I (Arnold)  
*Oval Pictorial Arithmetic*, Sets I and II (Charles)  
*Wisdom's Arithmetical Dictation*, Book I (U L P)

## ARITHMETIC AGES 7 1-8 6

Establishment of subtraction with equal additions and  
multiplication with carrying-figures by 2, 3, 4, 5, 6

Larcombe's *Practice Cards for the Very Young*, Eighth Year  
(Evans)

Larcombe's *Revision Cards for the Very Young*, Eighth Year  
*Welbent Practice Arithmetics*, Books II, III, IV, V (1st half)

"A L" *Number Wheels for Individual Work* (1A)

"A L" *Number Wheels for Individual Work* (2)

Selections from Text-books

*Uphall Test Cards*, Set A (Charles)

*Right from the Start Arithmetics*, Book I (Oliver and Boyd)

<sup>1</sup> For further discussion of the curriculum aligned with arithmetic age, see  
*The Young School Failure*, Chapter XII



## ARITHMETIC AGES 8 7-9 6

Establishment of division with carrying-figures Addition and subtraction of shillings and pence Multiplication and division by 7, 8, 9, 10, 11 and 12

*Welbent Practice Arithmetics*, Book VII

Selections from Text-books

*Foundations of Arithmetic*, Book I

## ARITHMETIC AGES 9 7-10

Establishment of four rules in pounds, shillings, and pence

*Welbent Practice Arithmetics*, Books XIII and XIV

*Foundations of Arithmetic*, Book II

"B & A" *Junior Arithmetic*, Book I

## ARITHMETIC AGE 10+

Establishment of four rules in length and capacity

"B & A" *Junior Arithmetic*, Book II

*Modern Guide Arithmetic*, Book IV

Larcombe's *Supplementary Practice Arithmetics*, Book III

Leslie and Matthias's *Workaday Arithmetic* (Cassell)

The phrase "Selections from Text-books" refers to the four books which were cut up and rearranged to give more intensive practice to each level These books were

*Modern "Guide" Arithmetic*, Book I

*London Arithmetic*, Book I

"B & A" *Junior Arithmetic*, Book O

Larcombe's *New Arithmetic for Junior Schools*, Book I

This was an effort to meet the problem often raised by teachers that retarded children need longer practice to 'stamp in' a new process before they pass on to the next It is impossible to set out here how the pages were arranged in order after they were cut. An example would be the grouping of the shopping sums from the *Modern Guide* and the *London Arithmetic* It is not a difficult matter to carry out this arrangement if one has clearly in mind the curriculum of the years 7 1 to 9 6 as indicated by the test.

This selection of published material was made with a view to the difficulties which the dull children and the poor readers meet in coping with the printed exercises. Text-books which demanded too high a standard of attainment in reading or too high a degree of intelligence were rejected. To a certain extent the children must be coached in the words commonly found in the printed exercise, such words as 'altogether,' 'more,' 'how many,' 'how much,' 'from,' and 'take.' Wisdom's *Arithmetical Dictation* (Book I) is helpful in this respect. For younger children the *Beacon Number Reader*<sup>1</sup> provides some interesting and useful material which can be read aloud phrase by phrase, the pupils repeating what their teacher reads.

In addition to text-books and sum cards, materials for computation in concrete media were requisitioned. A complete requisition list of these will be given at the end of the chapter, but it is necessary to explain here how these were allocated and the use that can be made of them.

It is suggested that every child with an arithmetic age of less than 7 years should possess

- 1 *Scholar's Tidy Box* containing
  - 2 sets of digits from 0-9
  - 10 copper studs
  - 5 sixpences, 5 farthings, 5 halfpennies, 1 shilling, and 12 pennies
- 1 *Envelope* 10×8 in. containing
  - 2 cards or stiff paper folder stamped with double domino pattern thus



- 1 ruler marked in inches and quarter-inches only
- 55 ring counters
- 20 ordinary counters

<sup>1</sup> C. M. Fleming, *The Beacon Number Reader* (Ginn and Co., Ltd.)

Each child with an arithmetic age of 7+ years has

- 1 *Scholar's Tidy Box* containing
  - 2 sets of digits
  - 24 inch-sticks
  - Copies of the four signs
- 1 *Envelope* containing
  - 24 pennies, 5 sixpences, 3 shillings, 1 florin, 1 half-crown, 6 halfpennies, 8 farthings
  - 1 ruler marked in inches and quarter-inches

Other items of apparatus for class use will be mentioned in the section which follows dealing with the types of concrete application of number which can be used in instruction.

Perhaps the most important aspect of number is dealt with in the instruction which precedes the 7-year level of attainment. This is the time when the composition of number is established.<sup>1</sup> Grown people who still count on their fingers under the bridge-table are instances of those whose number concepts were never thoroughly established. It is much more important that a child should realize almost automatically that nine and seven make sixteen than that it should be able to add up hundreds, tens, and units with carrying-figures. If the composition of ten and the composition of numbers less than ten have been thoroughly mastered to the degree of automatic response it is an easy step to the composition of twenty, and still easier to reach to the quick computation of numbers above twenty. If a child is learning to add with carrying-figures at a stage when he is still counting laboriously on his fingers or with some other aid, he is being taught a mechanical trick prematurely. It is worth while persisting at the more elementary composition of number in the case of border-line defectives—that is, all children with I.Q.'s less than 85—until the last year in the junior school. There is much to do at this level which can give variety to the work. All the four rules can be exercised, but at a level of complexity which is within the child's grasp, and in addition there is practical

work with money, weight, capacity, and length, which again can be conducted at an elementary level. For these children the groundwork, usually accomplished by the child of average intelligence in the two-years of the infant school course, will begin in the junior school and spread over the first three years in this department. If by the age of 10+ years these children are adding tens and units with carrying-figures without too much strain in computation, their stage of attainment will be satisfactory in so far as the mechanical processes are concerned.

In the case of more intelligent children the move to the arithmetic implied in the last part of the year 6 to 7 in the test should not be made until the teacher is satisfied that there is facility in addition above the stage of laborious 'counting'—that is, that the composition of ten and its use in adding larger numbers is well known. In the case of dull children it will take two to three years to establish this after the chronological age of 7 years has been reached.

In number more than in any other subject intelligence and emotional balance set the pace of real progress. A good rote memory, which is enjoyed by some very dull children, can assist rate of progress in reading accuracy, but figures are abstract symbols much more remote from experience than words. Memorizing tables has less conceptual significance than learning to read or recite a poem if the child has not become well acquainted previously with what each number means in relation to other numbers.

Numbers rely ultimately on their relation to one another for significance. One hundred has no significance except in relation to the numbers which are smaller than itself and in a secondary way to numbers which are larger than itself. It is this exercise in relativity which forms the groundwork of learning to compute, and in consequence it is the composition of number which forms the foundations upon which the structure of the more complex processes can be built. The early significance which will attach itself to the four signs will be that of making numbers larger or smaller by

partition or encroachment. It is these two kinds of activity which give practice in the composition of number.

In the case of special class children practice in number composition will need to be maintained throughout their school career, and it is for this purpose that a number-games lesson once every week should be established as a matter of routine. A special section will be devoted to that later in the chapter, describing the number games possible and the practice-effects they will give.

The verbally expressed problem, such as "John had five nuts, he picked six more, how many has he now?" must attend upon the reading ability of the child—not only his reading accuracy, but also the level of his reading comprehension. The same sort of problem is placed concretely before the child if he is told to slide five beads along his counting-frame and then told to put six more with them and say how many he has moved now. The fact that another day he may have shells and another day sticks and another day ring counters merely adds interest in variety of stimulus—the arithmetic problem remains the same. This is stressed in order to point out that it is the arithmetic structure of the problem which is important, not the social setting. The only difference between the verbally expressed problem and the problem in partition or addition of concrete objects is that the former involves an exercise in reading comprehension over and above the arithmetic insight. Teachers who have children with reading ages below 6 years need not fear that their children cannot do problems. The only difference will be that the problems must always be presented in concrete media through coins, counters of various kinds, sand, paper, water, etc. Number games will help in giving additional significance to the purpose of number symbols.

Number has become divorced from reality when subtraction with carrying-figures in hundreds, tens, and units is taught as a mechanical trick before the relative sizes of hundreds, tens, and units have been concretely experienced and familiarized.

## THE METHOD OF INSTRUCTION

The allocation of time in one week to number in junior and senior special classes is suggested as follows

JUNIOR CLASSES (45-minute lessons)	SENIOR CLASSES (45-minute lessons)
3 Mechanical Arithmetic	2 Mechanical Arithmetic
1 Problem Arithmetic	2 Problem Arithmetic
1 Number Games (including practical work in weighing and measuring)	1 Number Games (including practical work)

The first step in organizing individual work in number is to discover by means of the arithmetic test what level of attainment each child has reached. Some guide to the percentage of pupils occurring at each level may be derived from the statistics given at the beginning of this chapter. The next stage will necessitate deciding what kind of activities will be useful for teaching number at these various stages. This will determine the requisition list and the preparation of material for apparatus. It is perhaps necessary to have at least five different kinds of objects which would act as 'counters'. Coloured inch-sticks, cowrie shells, ring counters, ordinary counters, and beads of several kinds were chosen. This would allow for variety in becoming familiar with number concepts and the composition of number.

## ACTIVITIES GIVING PRACTICE IN NUMBER CONCEPTS

1. Bead-threading in twos, threes, etc., the groups of round or square beads punctuated by a bamboo reed. Labelling with digit tablets.

2. Progressive bead-threading from 1 to 5 and 6 to 10, each amount punctuated by bamboo reed—for example, 1 bead—1 bamboo—2 beads—1 bamboo—3 beads—1 bamboo, etc.

3. Irregular bead-threading—according to prearranged

digit tablets—for example, 5—3—1—2—4 punctuated by bamboo reeds

4. Making new number patterns with shells and china or glass beads. This can be done quite effectively if a slab of Plasticine is prepared in which the arranged shells or beads can be embedded

5. Arranging ring counters on copper studs and labelling with digits in a similar fashion to bead-threading

6. Sorting objects into boxes divided into ten compartments—for example, 1 penny, 2 shells, 3 farthings, 4 ring counters, 5 copper studs, 6 shells, 7 blue beads, 8 red beads, 9 ordinary counters, and 10 sticks, and labelling each compartment with its correct digit.

7. Making dot patterns thus

$$\begin{array}{c} \cdot \cdot \\ \cdot \cdot \end{array} = 2$$

$$\begin{array}{c} \cdot \cdot \\ \cdot \cdot \cdot \end{array} = 3, \text{ then joining the dots}$$

with lines —,  $\nabla$  and colouring with crayons. The two dots and the three dots will be in different colours. Later this can be used for composition of number thus

$\begin{array}{c} \cdot \\ \cdot \end{array}$	$= 2$	The dotted lines
$\begin{array}{c} \cdot \\ \cdot \\ \cdot \end{array}$	$= 3$	show the sub-
$\begin{array}{c} \cdot \\ \cdot \\ \cdot \\ \cdot \end{array}$	$= 4$	sequent join-
$\begin{array}{c} \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \end{array}$	$= 9$	ing to form a
$\begin{array}{c} \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \end{array}$	$= 9$	nine pattern
$\begin{array}{c} \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \end{array}$	$= 9$	before colour-
$\begin{array}{c} \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \end{array}$	$= 9$	ing.

Usually there will be eight or ten children in a junior special class who will need these activities, and just a few in senior special classes who will benefit by a course of this. The large Bankside peg-board (Philip and Tacey), with 144 pegs, is useful for number-concept work in the senior school. A boy of 11+ years who is still doubtful about the relative sizes of numbers can be set to work to construct the same number in as many ways as possible with his differently coloured pegs and indicate each combination with his digits, tablets, and a sign. He can then dispense with the pegs and

use the tablets only, seeing how quickly he can put them in place once they have been shuffled. There will be in all probability two or more boys in each senior special class who will need practice in number concepts and composition. The seventh of these hints can be used to good purpose with these extremely retarded seniors, but, of course, with a larger number of dots.

#### ACTIVITIES GIVING PRACTICE IN NUMBER COMPOSITION

1. For composition of numbers up to five, arrange beads of two colours on beadless bars, thus  $4+1=5$  would be represented by 4 blue beads and 1 red bead, with appropriate digit tablets. This can be repeated for any number combination up to ten. After ten and up to twenty two beadless bars will be necessary. For totals larger than ten always the one beadless bar is made up to ten beads and the odd ones are left on the other bar, thus

$$\begin{array}{ccccccc} \text{Blue} & \text{Red} & & \text{one bar} & \text{other bar} & & \\ 7 & + & 6 & = & 7 & + & 3 + 3 = 13 \\ & & & & \text{Blue} & \text{Red} & \text{Red} \end{array}$$

2. Bead rails containing twenty beads in two colours, ten in each colour.

3. Arranging counters on previously drawn plans of number concepts, thus



Put out four counters. How many more to make five?

Place the last counter. This can be repeated for totals of ten and twenty





4 In the second stage of number composition up to ten the top and bottom sections of the domino pattern will be used for the two amounts respectively, thus

$$\begin{array}{c} \bullet \bullet \\ \circ \\ \bullet \bullet \\ \bullet \bullet \\ \circ \end{array} 2 \quad + \quad = \quad \begin{array}{c} \bullet \bullet \\ \bullet \\ \bullet \bullet \\ \bullet \bullet \\ \circ \bullet \\ \circ \bullet \\ \circ \end{array} = 6$$

$$\begin{array}{c} \bullet \bullet \\ \bullet \bullet \\ \bullet \bullet \\ \bullet \bullet \\ \circ \end{array} 4$$

In each case the five will be completed and treated as the basic concept, just as ten is for totals larger than ten. Thus the child sees  $2+4=5+1=6$  rather than saying 'two' and counting up to six, pointing to the four counters. Some children cannot even say 'two' as a starting-point, they have to begin counting from the beginning to ascertain that there are six counters. These children need an intensive course of number-concept work and are not yet ready for number composition.

The large board giving ten pegs arranged in this way for teachers' demonstrations is very useful in connexion with this activity. Although number concepts need to be taught with as wide a variety of objects and arrangements as possible, this is not necessary with number composition. If number concepts are well established, practising number composition will be greatly facilitated. If a child has experienced the grouping of seven objects sufficiently, it will be a very short step for him to deduce or observe that  $5+2=7$ . Well-established number concepts render number composition yet more self-evident, and two or three devices which present number composition concretely will suffice—for example, beads of two colours and beadless bars, a rail of twenty sliding beads in two colours, and the domino blanks already referred to. The teaching of number concepts and number recognition is instruction in the basic language of arithmetic, the teaching of number composition is instruction in the interrelation between the concepts. It is not an exaggeration to say that these early stages of instruction are the most

important for the everyday use of arithmetic. For composition of numbers larger than twenty bundles of tens made up in inch-sticks fastened with elastic bands can be used. The children can use their digit tablets and signs to show the sum after it has been expressed in concrete form.

The long bead chain made up of a hundred giant beads, ten of each colour, is an invaluable aid in familiarizing children with the larger numbers. Another device which is extremely useful for this purpose is a wooden base supporting ten vertical dowell rods for the purpose of holding a hundred cotton-reels in spikes of ten different colours. This and the long bead chain will demonstrate one hundred in two kinds of groupings. In the senior school the 144-peg board demonstrates the composition of numbers up to and over a hundred, and there is no need to introduce brightly coloured beads and cotton-reels in this department.

**Tables.** The approach to the formal building up and memorizing of multiplication tables can be made through bead-threading with differently coloured beads in twos, threes, etc., and by this means learning to count in twos, threes, fours, etc., up to the twelfth grouping. Long strips of cardboard can be prepared, marked across with lines at intervals where the termination of each group of beads will be, and numbered 2, 4, 6, etc., or 3, 6, 9, etc. A lace is fastened at the end nearest the smallest number with the tab-end free for threading.

A second stage after bead-threading and -counting is provided by the use of a Lotto set. This contains a sheet of squared paper with the numbers 1-89 set out in sequence, and some round wooden tablets with corresponding numbers cut in relief. The children can place the appropriate number tablets showing the answers to the table in question—that is, 2, 4, 6, 8, etc., or 3, 6, 9, 12, etc.—on the appropriate squares. They can then see the empty spaces between, and the relevancy of the answer is thrown into relief. The twelve tablets required for the table should be extracted from the box before the arranging begins. When this sequence has

been familiarized the child can arrange the wooden tablets in order without the aid of the numbered sheet. A last device can consist of placing digit tablets under the wooden ones, indicating how many twos or threes go to that particular number.

After this is sufficiently practised some kind of bead frame can be used for building up the table formally. A strip of stiff strawboard can be pierced twelve times at intervals in two vertical lines. The distance between the two vertical lines should be sufficient to accommodate four beads without overlap if it is the 2-times table, six beads if it is the 3-times table, and so on. Twine can then be threaded across in front and down at the back continuously, each thread across bearing the number of beads designated by the table. The round glass or china beads are best for this purpose. The child can then slide the threes in turn from left to right as he builds up his table in the formal fashion, thus

$$1 \times 3 = 3$$

$$2 \times 3 = 6, \text{ etc}$$

Cards showing this form of stating the tables should be ready so that the child can copy it down and insert the answer with the help of his bead card.

The method of instruction in the special class will be group teaching followed by exercises. The exercises before an arithmetic age of 7 years can be written on the board for each group in the absence of organized individual work. Such sum cards as *Arithmetic Cards for the Very Young* (Grade II) are helpful after practice with concrete media and digit tablets and signs has established a fair degree of proficiency.

Half the class in the junior school special class may have an arithmetic age above 7 years. These will be able most easily to carry on with sum cards once they have grasped the process, and these should be arranged so as to give intensive practice at each stage, with revision exercises at intervals. Since the introduction of new processes will take place at a slower rate with special class children, it is necessary to

rearrange text-books and sets of sum cards which have been designed for children capable of normal progress. It was for this reason that the four text-books suited to the 7-8-year level and Larcombe's *Sum Cards for the Very Young* were rearranged to cover the years 7 to 9

In the senior school special class the children will fall mainly into three groups with arithmetic ages of 7+, 8+, and 9+ respectively. There will be an odd child or two at the extremes of these groups. The individual exercises which are used in the junior school for the children with arithmetic ages of above 7 years will serve for these children too, and it would seem essential that the schemes should be the same for both departments to ensure that there is unbroken continuity in the material presented to the child when he changes from the junior to the senior department. In no subject is this more important than in arithmetic, where progress is only possible if a certain logical sequence is observed.

It would seem unnecessary to teach the retarded child in the senior school the process of long division. It is the kind of sum he will not require in after-life, and the complexity of intellectual operations involved is beyond the capacity of the border-line defective and the dull child. For these children it will subserve a much more useful purpose if they work through such a text-book as Leslie and Matthias's *Workaday Arithmetic* (First Book) during the last six months or so in the senior school. This will give them practice in arithmetic applied to everyday life, and they should be able to work at such a level of complexity if they have reached an arithmetic level of 10 years.<sup>1</sup>

#### PRACTICAL ARITHMETIC AND NUMBER GAMES

It is suggested that each child should have an opportunity of practising the manipulation of weights and measures and buying and selling at least once a month.) It will be

<sup>1</sup> For a further discussion of class methods of teaching arithmetic, see *The Young School Failure*, p. 106.

remembered that in both junior and senior special classes it was suggested that one lesson per week should be devoted to number games and number activity generally. In such a lesson there will be of necessity much bustle and noise if all the pupils are fully occupied. During this lesson one-quarter of the class can work through previously prepared exercises in weighing, measuring, and shopping. The remaining three-quarters of the class can be occupied with number games, which will speed up elementary computation by virtue of added emotional incentive. [This arrangement will allow each child to practise with money and weights and measures at least once every four weeks.]

#### APPARATUS FOR WEIGHING, MEASURING, AND SHOPPING (JUNIOR SPECIAL CLASS)

One pair of scales (not spring balance) with a set of weights, such as is used in a grocer's shop, 1 stone of silver sand and securely sewn cloth bags, long strips of paper (cut from wall-paper roll), one yard measure in inches and quarter-inches glued to wall, the quarter- and half-yards indicated clearly, some yard-sticks cut from laths and marked on one side in feet only and on the other side in feet and inches only, some yard tape-measures like the one glued to the wall, some strips of thin cardboard, marked in inches and half-inches, measuring from two to twelve inches—some with an odd half-inch—for example,  $1\frac{1}{2}$ , 3,  $2\frac{1}{2}$ , 5,  $3\frac{1}{2}$ , 7 inches, etc., some milk-bottles (3 of each), borrowed from a local dairy, in quarts, pints, half-pints; some metal measures in all sizes, one of which can have a marked scale up the side, a small galvanized bucket, a large enamel bowl with handles, with the gallon-levels painted on it, a square of linoleum, some two-inch bamboo beads and half-inch smaller beads and long and short laces; a miscellaneous assortment of coins for till and purchaser, a collection of articles to form the nucleus of a shop, a box in which to keep the shop when not in use.

**The Shop.** There will be seven or eight children who will be engaged on activities other than number games. Of these, three or four can play with the shop, one as seller and three as purchasers. The younger children will bring increased emotional enthusiasm to the game if they are allowed some sort of wheeled article such as a small trolley or doll's pram with which to go shopping. It is often combined with playing 'mothers and fathers,' and the shopping is carried out as it is at home. Some one is sent to the shop, and the change must be right. Bill-heads can be purchased cheaply from a local grocer.

For shopping activities to be really beneficial the children must bring spontaneity to the activity. Most of the articles to stock the shop can be made in handwork lessons. Cakes, bread, sweets, etc., can be modelled, and afterwards painted, by mixing three parts of flour with two of salt. The dolls' furniture, candlesticks, carts, etc., made in handwork lessons from waste materials, are valuable contributions. Half the fun to the shopkeeper will be the arranging and pricing of the articles to be sold. The permanent, elaborately arranged classroom shop deprives the child of this important activity. If the contents of the shop are hidden away in a box until the practical activity lesson arrives there will be greater possibility of creative fun in connexion with this arithmetic experimentation. A shop is of little educational value if it is not also a source of fun.

**Measuring in Length.** Short measurements of less than a foot can be made by threading bamboo and smaller beads. The bamboo beads can be purchased in varying lengths. The short pieces of cardboard can be measured and marked in inches and half-inches and kept in an envelope. The direction-cards for this exercise will read, "Make a bead chain of  $5\frac{1}{2}$  inches." These direction-cards will also be kept in the same envelopes. The laces and beads will lie in a wooden box marked in some way to show that it belongs to the envelope.

Longer measurements can be cut by the children from the narrow rolls guillotined from wall-paper. The directions can be simply stated thus "Cut off  $1\frac{1}{2}$  yards of ribbon." The non-readers will soon become acquainted with the repetition of the same command. They can make a repetitive pattern in coloured pencil on the plain side in units of an inch or two inches. This can be suggested to them verbally, if there is still time, when they bring their completed exercises for inspection.

Another set of exercises can deal with human measurements—for example, "Measure a boy's (girl's) head," "Measure a boy's arm," "Measure a boy's foot," "Measure a boy from head to foot," "Measure Teacher from head to foot." The answers will be written down, and pencils and slips of paper can be put in a box with the tape-measures and direction-cards.

If the direction-cards for each set of exercises are prepared in this way, the teacher's work of supervision is reduced to a minimum.

**Measuring Capacity.** Water and silver sand can be used for measuring capacity. If water is used it is advisable to cover a corner of the classroom with linoleum, in which case the spilled water is easily dried off. Wooden blocks take much longer to dry and are less pleasant to wipe. The child who has been measuring with water will be pleased to do this if a swab is available. The large enamel bowl will be filled to the extent of two gallons. The small bucket, with marks painted up the sides indicating pint-levels, will be handy both for emptying the water and as a receptacle for measured quantities.

The direction-cards for these exercises can be graded in difficulty. "Put 2 half-pints in a pint bottle," "Put 2 pints in a quart bottle," "Put 5 pints in the bucket," "Put 2 quarts and 1 pint in the bucket," "Put 10 half-pints in the bucket." At first the children will need to be shown to which measures the direction-cards refer.

Another set of exercises can refer to quantities remaining after some has been removed "Take 8 pints out of the bowl and put them in the bucket. How much is left?" "Put the 8 pints back. How much water is in the bowl now?" "Take 4 quarts out of the bowl and put them in the bucket. How much is left in the bowl?" "Put the 4 quarts back. How much is in the bowl now?" "Put 16 half-pints in the bucket. How much is left in the bowl?" "Put the 16 half-pints back. How much is in the bowl now?"

These activities will give an idea of the various measures in relation to one another and prepare the way for the more formal learning of the tables and their use. They can be put in the form of the four rules concretely exemplified.

(i) "Put 2 pints and 3 pints in the bucket. How many pints are there?" (Adding)

(ii) "Put 5 pints in the bucket. Take out 3. How many remain?" (Subtracting)

(iii) "Fill a quart pot twice and put it in the bucket. How many pints are there?" (Multiplying.)

(iv) "Put 6 pints in the bucket. How many quart bottles will it fill?" (Sharing.)

The dull children will be unable to go so far in the prepared direction-cards as those who are of average intelligence. Directions such as the last set will be too difficult for children with I Q below 85 until they reach the senior school. This kind of activity develops arithmetic sense in the retarded child to a high degree, and will help in the more formal work because it will have more reality value.

**Weighing.** There are many things in the classroom which can be weighed, such as exercise- and text-books, boxes, copper studs, and the silver sand. Exercises introducing the children to the relative value of the weights can read thus.

1. "Weigh 1 lb. of sand." "Weigh  $\frac{1}{2}$  lb. of sand." "Weigh  $1\frac{1}{2}$  lb. of sand." "Weigh 2 lb. of sand."

2. "Weigh 1 oz. of sand in a box." "Weigh 7 more



boxes like this " "Put the 8 boxes on the scale Find a weight like them "

"Put the 8 boxes and the weight on one side Find a weight like them "

3	"Weigh 1 book	} books of one set
	"Weigh 2 books	
	"Weigh 3 books	
	"Weigh 6 books	
	"Weigh 4 books	
	"Weigh 8 books	

And for older or more intelligent children

4 "How many thin books weigh as much as 1 thick book?" (*Note*—Thick books to weigh 4 oz. or thereabouts.)

"How many copper studs weigh as much as 1 thick book?"

"How many thin books weigh as much as the copper studs?"

"How many ounces does the thick book weigh?"

"How many ounces do the copper studs weigh?"

"How many ounces do the thin books weigh?"

"How many ounces do they all weigh together?"

Activities with standard measures and weights are not profitable except at a level of simple comparison until a mental age of 7 years has been reached Thus the children with I Q's lower than 85 should be introduced to these activities in their second year in the junior school. Little profit will result if they are expected to accomplish earlier the printed problems stated above.

### NUMBER GAMES (JUNIOR SCHOOL)

The rules of most number games can be adjusted to meet the requirements of the process which is to be practised.

**Games Practising Number Concepts.** (1) *Patience* (*material for four players*) Four sets of ten cards in an attrac-

tive colour. One set will show the number patterns 1 to 10 in bright adhesive spots, another set will show the numbers 1 to 10 printed boldly, the next two sets will show groups of objects or creatures—for example, animals or toys or fruits—also allocated 1 to 10 in each set. When these are all set out in order there will be four rows, one showing the figures one to ten, the other three giving the pictorial presentation of the numbers 1 to 10.

*Rules* The cards are shuffled and dealt to four players. The child possessing the dot pattern for 'one' begins by placing her card, the child holding the dot pattern 'two' follows, placing her card on the left of the first card. This continues, each placing when they have the succeeding card in the series, until the dot number pattern-line is completed. Then the row of figures is completed in similar fashion, followed by the next row of rabbits (suppose), and completed by the fourth row of toys. The child who puts all her cards out first wins. The child possessing the last 10 is bound to lose in this way, but it is a good method by which to introduce the game. If both down- and across-matching are allowed this handicapping of one player is avoided.

(ii) *Making Patterns with Bricks and Mosaic Pieces*

(iii) *Class Singing*

"The Animals went in Two by Two"

"Ten Little Nigger Boys"

"Ten Green Bottles"

"One, Two, buckle my Shoe"

"One-two-three-four-five,  
once I caught a Fish alive"

These can be accompanied by concrete representation of the articles, or persons, referred to

(iv) '*Snap*' (for two players) The snap-cards consist of two sets of cards bearing bold representations of number patterns in varied arrangements. A variation on this would be to have sets of digits and sets of patterns to match

(v) *Flick Disc* A long, flat smooth tray, about 4 ft  $\times$  1 ft

3 in., with raised edges. The number patterns on paper about the size of a playing-card pasted in three rows at one end of the board. Two or three metal discs about the size of a halfpenny but heavier. A ring is marked at the other end of the board as starting-point.

The disc is propelled forward by a flick of the finger, and the score is the number pattern on which it comes to rest.

(vi) *Dice games* are chiefly of value as a counting-device and as practice in number concepts up to six.

(vii) *Dominoes* are useful for both number concepts and number compositions. Sets can be made where the criterion for matching can be the composition of 7, 8, or 9. Thus



**Number Composition, etc. (Junior and Senior School).** (i) *Bull Board*. For two or more children. A sheet of three-ply wood 36 inches square having a ledge of wood about  $1\frac{1}{2}$  inches wide along one side, which gives the board a slight slope when it is placed on the ground. The surface is painted into sixteen 9-inch squares. These are labelled with figures to enable practice in any process desired—for example, numbers up to 10 or beyond 10, any of the four processes—exercises such as  $36-9$ , or  $2 \times 12$ ,  $7-3$ ,  $9+7$ . Three or four round flat bags of about two to three inches in diameter filled with silver sand.

The children take it in turns to throw the bags on to the board from an appropriate distance. A scorer can enter the score resulting from each throw on a separate slip of paper, handing it to the competitor at the end of each round. After an agreed number of rounds the scores can be totalled and the competitors placed in order.

(ii) *Spinning Wheels*. Some three-ply wood shaped into a regular hexagon and with a spindle rod through the centre. Each section to be marked as desired—for example, "Spend

1s 6d" "Earn 3s 0d" "Lose 1s 2d" "Birthday present 2s. 6d" "Give away 6d" "Put 7d in the bank" The top, when spun, will come to rest on one of its hexagonal sides. This will be the score Competitors can enter their own scores in this game.

(iii) *Marble Arch* A long, flat tray, about 4 ft  $\times$  1 ft 3 in, with raised edges A few inches from one end a line of arches in three-ply wood labelled above each one as desired A round stick about 18 inches long and five or six marbles. A small dent in the centre of the board about 3 inches from the end.

The marbles are struck (as in billiards) in turn, and the score depends on the arches they pass beneath.

(iv) *Shooting at Targets* It is possible to buy pistols which propel by means of a released spring The bullets are sticks ending in rubber suction-caps which stick to any firm surface. They are very light, and even if a small boy receives one of these in the eye at a distance of a yard or so, he feels a smart sting but no bruise results. These are recommended in place of darts, which have to be used with caution The target, with appropriate scores, can be painted on the wall

(v) *Spinning Tops*. These can be made quite simply out of two or three ring counters placed together with an inch of stick fastened through the hole. The counters can be held in place by means of thin rubber bands twisted round the stick above and below the counters. Small flat trays about 8 inches square with edges raised about 1 inch will make suitable spinning-grounds The bottom of the tray can be lined with paper marked out in inch squares, and each square marked with its score. Where the toe of the top comes to rest is the score

(vi) *Fish-pond* The fish can be made of stiff paper with wire rings through their noses Magnets can be bought cheaply The scores on the fishes' bodies can give practice as desired

(vii) *Donkey* The parlour game A donkey drawn on a

large sheet of black or brown paper with his body mapped out into regions, having high value near the tail. This can be used as a team game.

(viii) *Throwing a damp sponge* against the blackboard from the back of the room. The blackboard can be marked out in irregular shapes each bearing a value. This too can be used as a team game.

(ix) *Bagatelle*. Cheap bagatelle sets can be purchased.

(x) *Lotto* can be used to practise number recognition with larger figures in the senior school.

Most of these games can be adapted to suit any purpose, and the set, when complete, can give adequate practice in all elementary computation in the four rules in ordinary notation and money in a graded sequence.

Children in special classes are for the most part immature and are apt to quarrel over number games. An independent scorer, who changes place with one of the players after the completion of the game, will minimize this difficulty. The scorer should only record—not reckon—the total score. This should be done by the players.

Most of these games can be used with effect in senior special classes to give the elementary practice which these children need.

## JUNIOR SCHOOL

### SUGGESTED ARITHMETIC EQUIPMENT FOR A SPECIAL CLASS

Quantity	Description	Published by
6 copies	"B & A" <i>Junior Arithmetic</i> (Book O)	Cassell
3 "	Laicombe's <i>New Arithmetic for Junior Schools</i> (Book I)	Macmillan
3 "	Modern "Guide" <i>Arithmetic</i> (Book I)	Davis and Mough- ton
3 "	Modern "Guide" <i>Arithmetic</i> (Book IV)	Davis and Mough- ton
3 "	Ballard's <i>London Arithmetic</i> (Book I) First Series	U L P

Quantity	Description	Published by
1 box	"A L" Number Wheels for Individual Work (Box 1A)	Arnold
1 "	"A L" Number Wheels for Individual Work (Box 2)	Arnold
1½ doz	Foundations of Arithmetic (Book I)	Nelson
1 doz	Foundations of Arithmetic (Book II)	Nelson
2 of each	Wellbent Practice Arithmetic (Books I, II, III, IV, V, VII, XIII, XIV)	Arnold
6 copies	"B & A" Junior Arithmetic (Book I)	Cassell
1 copy	Wisdom's Arithmetical Dictation (Book I) With answers	U L P
5 doz of each	"A L" Digit Tablets (0, 1, 2, 3, 4, 5, 6, 7, 8, 9)	Arnold
1 of each	Monteith's Wellbent Scheme of Individual Work in Number	
	Stage I Steps 1, 2, 3, 4	
	Stage II " 1, 2, 3, 4	
	Stage III " 9	
1 of each	Stage IV " 1, 2, 3, 8, 10	
	Stage V " 4, 8, 9, 12	
1 pkt of each	Larcombe's Arithmetic Cards for the Very Young	Evans
1 box of each	Grade II, III 8th-year Practice	Charles
	8th-year Revision	
	Oval Pictorial Arithmetic Test for Infants (Set I, Set II)	
1 box	Uphall Pictorial Arithmetic Test Cards (Set A)	
500	Loose "Little Giant" Cube Beads	Philip and Tacey
50	Beadless Bars for these	Philip and Tacey
500	½-inch Bamboo Reeds	Arnold
1 doz	Fine 40-inch laces	Arnold
100	1-inch Rainbow Round Wooden Beads in 10 colours, 10 of each colour	Philip and Tacey
500	Cowrie Shells	Arnold
4 boxes	Gummed Spots, 1 R, 1 B, 1 Y, 1 G	Arnold
2	Riverside Sorting Trays, No 10	Philip and Tacey
2 stone	Silver Sand	
1	Large Ten-peg Board	Charles
1 gross	Copper Studs	Arnold
100	Envelopes 10×8 inches	Arnold
3 doz	"A L" Scholar's Tidy Boxes, No 8	Arnold
3 doz	Rulers (in quarter-inches)	Arnold

Quantity	Description	Published by
$\frac{1}{2}$ doz	Tape-measures	Arnold
1000	Ring Counters, No 13 ( $\frac{1}{2}$ -inch hole)	Arnold
1000	Ordinary Counters	Arnold
1000	1-inch Coloured Sticks	Arnold
	<i>Loose Coins</i>	
100	Sixpences	Arnold
200	Farthings	Arnold
200	Halfpennies	Arnold
600	Pennies	Arnold
100	Shillings	Arnold
2 doz	Florins	Arnold
2 doz	Half-crowns	Arnold
1 doz	Clock Faces for class teaching	Arnold
$2\frac{1}{2}$ doz boxes	Radiant Coloured Crayons	Philip and Tacey
500	Chelsea Cube Beads, $\frac{1}{10}$ inch	Philip and Tacey

## SENIOR SCHOOL

## SUGGESTED ARITHMETIC EQUIPMENT FOR A SPECIAL CLASS

Quantity	Description	Published by
2 copies	"B & A" <i>Junior Arithmetic</i> (Pupils' Book O)	Cassell
6 "	"B & A" <i>Junior Arithmetic</i> (Pupils' Book I)	
12 copies	"B & A" <i>Junior Arithmetic</i> (Pupils' Book II)	
1 copy	"B & A" <i>Junior Arithmetic</i> (Teachers' Book O)	
1 "	"B & A" <i>Junior Arithmetic</i> (Teachers' Book I)	
1 "	"B & A" <i>Junior Arithmetic</i> (Teachers' Book II)	
1 "	Larcombe's <i>New Arithmetic for Junior Schools</i> (Book I)	Macmillan
1 "	<i>Modern "Guide" Arithmetic</i> (Book I)	Davis and Moughton
6 copies	<i>Modern "Guide" Arithmetic</i> (Book IV)	Davis and Moughton
1 copy	<i>London Arithmetic</i> (Book I) Ballard First Series	U L P
1 box	"A L" <i>Number Wheels for Individual Work</i> (Box 1A)	Arnold
1 "	"A L" <i>Number Wheels for Individual Work</i> (Box 2)	Arnold

Quantity	Description	Published by
1 $\frac{1}{2}$ doz	<i>Foundations of Arithmetic</i> (Book I)	Nelson
1 doz	<i>Foundations of Arithmetic</i> (Book II)	Nelson
2 of each	<i>Welbent Practice Arithmetic</i> (Books I, II, III, IV, V, VII, XIII, XIV)	Arnold
1 doz	Larcombe's <i>Supplementary Practice Arithmetic</i> (Book III)	Evans
1 copy	<i>Arithmetical Dictation</i> (Book I)	U L P
3 copies	144 Bankside Peg Board	Philip and Tacey
1 doz of each	"A L" <i>Digit Tablets</i> (0, 1, 2, 3, 4, 5, 6, 7, 8, 9)	Philip and Tacey
1	Teachers' Book to <i>Foundations of Arithmetic</i> (Books I and II)	Evans
1 of each	Teachers' Book to <i>Modern "Guide" Arithmetic</i> (Books I and IV)	Davis and Moughton
1 pkt of each	<i>Arithmetic Cards for the Very Young</i> (Larcombe) Grade II Grade III—8th-year practice Grade III—8th-year revision	Evans
3 copies	Leslie and Matthias's <i>Workaday Arithmetic</i> (First Book)	Cassell

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## CHAPTER VIII

### BACKWARDNESS AND ACTIVITIES IN THE BASIC SUBJECTS

It is not uncommon to find that discussion of activity methods in the junior school arouses some anxiety and perplexity in those who teach these age groups. This is not so, however, where the teachers in infant schools are concerned, for with them it has been long established that activity methods are essential aspects of the curriculum. However, there is a difference in the significance of the methods in the two kinds of school. This difference is succinctly shown in two quotations from the Ministry of Education's pamphlet No. 6 on Art Education. Here in the section devoted to infant schools (p. 9) art activity is referred to as "natural to young children," and goes on to say that "the teacher will make use of it as a starting-point and means of education—to help children to read and write, to measure and to count." The significant phrase in this quotation is "as a starting-point." Later, in the section devoted to the general principles underlying the teaching of art in the senior school (p. 13), the following general proposal is made: "Wherever possible, the pupils' work in the arts and crafts should be related to their work in other subjects of the curriculum."

In considering the junior schools, however, there is no suggestion that art work should be "related to their work in other subjects," and it is stated that while "there is a place for class lessons in the proper use of tools," yet "they should be left free to experiment, to use all kinds of ways and media" (p. 11).

√ Thus with the youngest pupils activities prepare them for formal learning in a general way, in the primary junior

school they can prepare the pupil for the proper use of the basic skills in reading and number, the tools of learning, in the secondary departments they assist in applying skills to more creative ends.

In the infant schools starting-points are necessary, for the children are in a transition stage during which they pass from infantile egocentricity to the acceptance of sophisticated ways of behaviour according to certain conventional patterns, such as realizing that printed symbols are identical with speech and that they have a definite meaning which is sometimes very precise. Obviously, it is an aid in bringing about such a transition if the child meets with a problem which can be solved only by abandoning speech for writing. Thus, to establish learning readiness by activity methods is a technique which can remain spontaneous and free from any set pattern of teaching procedure. The development of the project determines the selection of words and skills, and, as these are at an elementary level upon which a co-ordinated superstructure has yet to be built, the selection can be made from an infinite variety.

In the junior school such activities will be introductory points rather than starting-points—introductory points to acquiring a new skill. On the other hand, they may represent halting-points, where a pause may be made while a new skill is assimilated by means of practice.

At this stage the superstructure begins to pile up and the grading of work must obey the age-long tradition of passing from the known to the unknown. Ordered sequence is necessary in reading and number, however free art work remains. Thus the free experimental activity will, for the most part, centre round the art lessons, but an increasing degree of sound disciplined learning will be necessitated by the demand for precision in the basic skills of reading and number. This is not at variance with the child's psychological development, for in the junior school there is a great increase in capacity to attend, remember, and recall, together with an increase in sophistication,

facilitating a certain amount of learning for its own sake where success may be achieved with reasonable ease. If all the basic skills were to be introduced when necessity arose, as when Rousseau's *Émile* went hungry in the forest during his introduction to topographical geography, much good time and energy would be spent in creating the "situations of necessity." Such situations will arise, especially in art lessons and in other activities of improvisation, but where the tool subjects of reading and number are concerned the fact that it is desirable to acquire these skills will provide the *raison d'être* of these formal lessons.<sup>1</sup> However, there will be a considerable carry-over of spontaneous energy from the free expressional work to the formal lessons, for the teacher will be the erstwhile companion and inspirer in mime and modelling, in drawing and dancing, and the desire to please a beloved adult is much stronger in motivating conformity than fear of punishment. Schools do exist where there is both punishment which exacts conformity and much free expressional work inspiring initiative. That is to say, when the lesson is formal, discipline is exacting, when the lesson is expressional, activity and spontaneity are encouraged. However, the more interest predominates in formal work the less the need for compulsion. This is emphasized by the writer of the Ministry's pamphlet,<sup>1</sup> *The Story of a School*, thus:

In my school the link between the arts and the other subjects was made consciously, and I think that possibly, to us, this was one of the most enlightening things that we did. We found we could link composition with art, geography with clay-modelling, speech with drama, history with craft

The simple dramatization of the theme of the primer which was advocated as a preliminary to reading is such an activity. Similarly modelling or painting characters depicting their activities as they are described in the text is activity work leading up to reading. With younger children in the first years of the junior school such activities are of

<sup>1</sup> Ministry of Education pamphlet, No 14, p 34

great value, for the content of the reading matter is of greater mnemonic value than the text. Memories of printed words must have their emotional pegs to hang on, for in this way they become connected with the wider matrix of associations already in the child's mind. If a network of associations is evoked by a word as it is presented visually, it has not one tentacle but perhaps five or more reaching out to fasten it in the mind. For instance, if the drama lessons have rendered Rover with characteristic 'dogginess' as a vivid, lively creature, analogous to their own experiences of their pets, the name when presented as a printed word will append itself to this network of experience with all its receptive feeling tone. Moreover, if the practice is adopted of holding a flash-card up while 'Rover' performs with the words "This is Rover" printed on it, this can eventually become a signal which asks for volunteers to come and mime what is on the card. A number of flash-cards could be used in such a miming lesson to practise and test silent recognition of the phrase. Repetition of the familiar has its uses with the backward child, for success should be easily attained. Miming and dramatization of such familiar themes can be maintained at a good level of spontaneity if in guiding the children's actions and words the teacher speaks extempore. In this way the action, though familiar, will always contain something new.

Another example of activity in relation to reading is the preliminary drawing of a theme to be written about, as was suggested previously, and still another is the way drawing can be used in carrying out instructions—instructions which are devised by using the vocabulary of the primers. *The Speedwell Book* provides excellent activities suited at the secondary school levels, in relation to the text of the reader.

An activity can be devised to practise almost any skill. Supposing, for instance, it is desired to familiarize the spelling of the word 'here'. A guessing game could be invented asking the question "Is it here?" A flash-card could be prepared, shaped like a large arrow, with the

question printed boldly on each side. A child can then be sent out of the room and the class can decide on the name of an object in the room to guess. On her return the pupil is told what the first letter of the object is. This is written on the board, and the sound it makes emphatically and clearly enunciated.

The pupil then wanders round the room touching articles with the pointer and saying "Is it here?" on each occasion. The children can take it in turns to answer, saying "Hot!", "Cold!", "Warm!", or "Yes!", according to the proximity of the pointer to the object.

Another guessing game could give scope for practising 'hear,' and could be called "I hear with my little ear, a word beginning with —". The words to be guessed could be chosen from the primers the children are using. The word 'hear' could be brought to notice by making an ear-trumpet out of paper and printing the word 'hear' on it. Guesses could be whispered into this as it was held to the teacher's ear. The whispering could continue in relay if the teacher has the ear-trumpet, for when the first word is correctly guessed by a child she can tell him the initial letter of the next on the list. The game can be continued for fifteen minutes or more, and each pupil could bring a slip of paper, which can be initialled at each correct guess. At the end of the time the pupils can count up and compare scores. It would be necessary, of course, to prepare the list of words carefully beforehand. In a large class a relay game would be difficult, and each word to be guessed would represent a fresh start in the competition for every one. To avoid confusion, "Is it here?" should not be played during the same week as "I hear with my little ear. . . ."

Activity in number is necessary in establishing number concepts and ideas of weights and measures, and also to practise these in combination when they are familiarized. The number games lesson; guessing competitions with weights and measures, contests in finding the tallest, largest, shortest, longest specified objects in the pupils' immediate

neighbourhood, the improvising of measures which combine units of two measures, such as egg-timers from funnels and silver sand, involving time, size of hole, and bulk of sand, measures of liquid capacity, by means of marked rods, comparisons of weight and capacity of various common commodities, using spoons, cups, and glasses, the improvisation of sets of weights from copper studs and small nails in small boxes—all these are activities which provide opportunity for doing and discovering and inventing.

To sum up, then, activities associated with the basic subjects serve two purposes—the first to give pupils a direct experience of the meaning of verbal and number symbols, and the second to afford interesting practice for the symbols and their interrelationships. Naturally, projects in other subjects give additional experience in the basic subjects, but this is incidental and unsystematic. The incidental activity in number and reading involved in history, drama, geography, or nature study has great value as an emotional stimulant and will react favourably upon progress in reading and number, but it would be insufficient without the systematic activity which has its specific end in preparing and exercising the pupils' minds for the understanding and fluent employment of words and numbers stage by stage.

## APPENDIX

### QUESTIONS SET ON BOOKS FOR THE SENIOR SPECIAL CLASS

READING AGE 7+

#### **"The Golden Cobbler"**

- 1 Where did the cobbler live?
- 2 What was his daughter like?
- 3 Say what you can about the beggar who tapped at the door.
- 4 What happened when the old man took back his mended shoes?
- 5 What warning was the cobbler given?
- 6 After his wife and daughter had brought silks and dresses, what did they still want?
- 7 Whom was the cobbler's daughter going to marry?
- 8 On the eve of the wedding what did the beggar man ask the cobbler?
- 9 What did the cobbler reply?
- 10 What happened to the cobbler and his wife and daughter?

#### **"Magic Duck"**

- 1 Who was little Ivan?
- 2 What did Ivan's father find on his way to town?
- 3 What did the duck lay each morning?
- 4 What did Ivan's father do to him when he found out that the duck had been eaten?
- 5 When Ivan reached Moscow how was he greeted?
- 6 What happened when Ivan became King?
7. Say what the younger girl was like in the story of "Little Red Cow"
- 8 What happened to Rushie Coat on Christmas Day?
- 9 What did the King and Queen do for the little Red Cow?
- 10 How was the little boy-fairy punished?

**"Three Silver Pennies"**

- 1 Who was Moll?
- 2 Who was Meg?
- 3 Who was Anne?
- 4 Where did Anne's grandmother live?
- 5 What did little Anne wish for most in the world?
- 6 What did Anne find in her shoes on the morning after the feast?
- 7 What happened to Moll and Meg on the night after the feast?
- 8 Whom did Anne meet on the way after visiting her grandmother?
- 9 Name the second person to whom Anne gave a penny?
- 10 How was the old dame dressed?

**"Neddy Know-nothing"**

- 1 Look at the picture on p 10 What is Ben Jones saying?
- 2 Look at the picture on p 23 For whom is Neddy working now?
- 3 Look at the picture on p 36. What had happened just before this?
- 4 Look at the picture on p 41 Why is Neddy dancing?
- 5 Look at the picture on p 51 What is Ned just going to eat?
- 6 Look at the picture on p 54 Why is Ned looking at Miss Jean?

**"The Wizard's Chair"**

- 1 What did Prince Robin grow up to be?
- 2 Say what you can about the King's brother
- 3 When did Prince Robin go?
- 4 What did the old man want him to do?
- 5 What happened to the old man?
- 6 Who lived in the big gloomy castle?
- 7 What was the inside of the castle like?
- 8 What was the matter with the Wizard's chair?
- 9 What happened when Robin sat in the chair?
- 10 How did Robin return to his home?



**"The Golden Mill"**

- 1 Which word best shows what Jean was like?
- 2 Which word best shows what John was like?
- 3 What shape did the queen of the fairies take when she called to beg?
- 4 What is the tiny boy saying in the picture on p. 29?
- 5 What has Jean round her neck in the picture on p. 55?
- 6 What were John's three wishes?

READING AGE 8+

**"The Secret Name"**

- 1 What did the mother sing as she chopped wood?
- 2 What did she change her song to when the King called?
- 3 What did the King do?
- 4 How did Mary find out the name of the black imp?

**"Grunling the Dwarf"**

- 1 What did King Burble promise to do while he was visiting his cousin?
- 2 When the King was walking in his sleep, what happened?
- 3 What did Grunling beg of the King?
- 4 What names did the dwarf want?
- 5 What happened to the King's sons after they had been christened?
- 6 What was Theodor like when he was taken to his father's palace?
- 7 How was Mamillus found?

**"The Man who sold his Heart"**

- 1 What was the Glass Man like?
- 2 Write out the verse which had to be recited to the Glass Man
- 3 What were Peter's two wishes?
- 4 Who was Dutch Michael?
- 5 How did the Glass Man appear to Peter again?
- 6 How did Peter get his heart back again?

**"The Poppy, the Lily, and the Rose"**

- 1 Describe the widow's two daughters
- 2 What is the picture on p 5 about?
- 3 What did Lilova dream?
- 4 What was the message of the Poppy, the Lily, and the Rose?
- 5 What did Guruma do to her sister?
- 6 What did the old man of the forest do?

**"King of Black Mountain"**

- 1 What happened to the King four days before the wedding?
- 2 When the King returned, what did he say to the Princess?
- 3 What proclamation was put up in all public places?
- 4 What work did the artists do for the King?
- 5 What happened when the Statue was uncovered?

READING AGE 9+

**"Beacon Study Readers" (Book I)**

*P 9* Answer all the questions on p 9, in a complete sentence like this

"My name is Tom Jones I am 12 years old."

*P 13* Finish the sentences like this

"A baby cries A bear growls "

*Pp 14-23* Read these pages Then write one sentence answering each of these questions:

- 1 How many times a day should a dog have meat?
- 2 How old should a puppy be before he has meat?
- 3 What should a dog have to drink?
4. What is good medicine for a dog?
- 5 What should you put on a dog to prevent him from biting?
- 6 Where should a dog sleep in summer?
- 7 What should you do with a dog after you have bathed him?

*Pp 24 and 25* Guess the answers to the riddles—then *tell* them to your teacher

*P 21* Write out the sentences, putting in the right words

*Pp 36-39* Draw and colour a green woodpecker, then write about it underneath, like this "It is a gayly coloured bird It is red, yellow, black, and white "

How does it help the trees?  
How does it catch insects? \*

*Pp 44-45* When you are ready, tell your teacher the answers

*P 46* Draw the picture and colour it Print the words "hydrant," "hose," "firemen," "flames" underneath, and draw arrows to show what things in the picture the words stand for

*P 51* Read about the mill, then show your teacher the paddles of the wheel and explain how they work the mill

*Pp 58 and 59* Answer every third question How many questions have you answered? It should be seven

*Pp 60 and 61* Read about the wind What is the wind? When does the air become so thick that we cannot see through it?

*Pp 62 and 63* Read about ships and windmills Draw a sailing ship and a windmill Put the windmill on the shore and the ship in the sea Put some clouds in the sky Underneath write down "The wind pushes the sails of the ship and turns the sails of the windmill "

*Read pp 68 and 69* Write down four harmful things the wind does

*P 104* Guess the answers and tell them to your teacher when you are ready

*Pp 116 and 117* Read about the polar bear Measure eight feet up the class-room wall Now you see how tall some bears are What do they eat? Where do they live?

*Pp 118 and 119* Find Alaska on p 14 of your atlas What does this bear eat? How does he catch fish? Measure nine feet up the class-room wall

*Pp 120 and 121* When is the grizzly bear most fierce? What does he eat?

*Pp 122-126* How big is a bear cub at birth? How long does he take to grow up? How does his mother teach him to obey?

## READING AGE 9+

**"Beacon Study Readers" (Book II)**

*P 11* Write this exercise

*Pp 12, 13, and 14* Get the answers ready to tell your teacher

*P 15* Read about the bulldog Write out the ten questions on pp 16 and 17 and put "Yes" or "No" after each one

*Pp 20 and 22* Read about the collie dog Answer the questions on p 22

*Pp 26 and 27* Read about the Eskimo dog

Write the sentences on p 28

*Pp 30 and 31* Read about the greyhound Be ready to read to your teacher the sentences asked for on p 31

*Pp 32-34* Read about the St Bernard dog Answer Questions 4, 6, and 9

*Pp 37-38* Answer every fourth question

*Pp 42 and 44* Read about the luminous fish Write another word for "luminous" Write another word for "illuminated" Answer the questions on p 44 Write this "Glow-worms, fire-flies, and some clocks are luminous"

*Pp 45, 47, and 50* What is strange about the fish on p 45? What is strange about the fish on p 47? What is strange about the fish on p 50?

*P 52* Write out the completed sentences

*P 55* Learn the months of the year Answer all the questions under the list of the months and at the top of the next page

Answer every fifth question on p 58

*Pp 82 and 83* Answer all the questions with even numbers

*Pp 106-110* Read about the toad How much money can a toad save a farmer in one year? Why? What four rules will save toads from being killed?

*Pp 113-115* Read about the Eskimo Answer Questions 1, 3, 5, 6, 7 In your atlas show where the Eskimos live

*Pp 118-121.* Read about Florence Nightingale Why was she called "The Lady of the Lamp"? What happened to wounded soldiers before she began her work?

#### READING AGE 9 5+

#### "Beacon Study Readers" (Book III)

*P 10* Finish the sentences which have odd numbers

*Pp 12-16* Read about homes long ago Answer Questions 3, 5, 6, and the last one on p 17

*P 18* Put the right parts of the sentences together

*Pp 36-42* What would you use to make a floating water clock? Draw an hour-glass What did King Alfred use to tell the time?

*P 51* Complete these sentences.

*Pp 64-67* Read about circus elephants and then answer Questions 3 and 4.

*Pp 68-73* Read about "Other uses of Elephants" and then finish sentences 2, 4, 6, 10, 11

*Pp 74-76* Read about the size and age of elephants Which elephants live longer, tame or wild ones? Which is the more healthy life for an elephant—in captivity, or in the wild jungle? How long must an elephant live before he is fully grown?

*Pp 79-83* Find two countries where "elephant" is marked on p 7 in your atlases Then turn to p 13 and look at the picture of an elephant at work What word is printed in Africa which shows that elephants must be there?

How many elephants are in a large herd? How do men frighten elephants when they want to capture them?

*Pp 85-87* Read about elephants in captivity Find the words asked for on p 87 Put them in sentences like this "Elephants in captivity are " "When an elephant dislikes his keeper he may " "A dangerous elephant may his keeper." "Tame elephants become rogues when they have "

*P 93* Read "The Habits of Elephants"

Answer Question 3 and the last two on p 97

*P 103* Write out every odd-number sentence and finish it off  
eg, 1 Some one who fills teeth is called a dentist  
3 Some one who drives a tram is called a driver

*Pp 122-128* Read about the little brown bat Write out sentences 1, 2, 7, 10, 12, and put "Yes" or "No" in brackets at the end Then complete the first and second sentences on p 130

*Pp 143 and 144* When you are prepared get your teacher to ask you the questions while you read her the right answer

*P 154.* Read about "Our enemy the rat," then answer Questions 1, 3, 6

*P 157* "How do rats destroy property?" Read this Answer Questions 2, 3, 4, 6, on p 161

*Pp 162-164* Read about getting rid of rats Then complete the sentences 2, 6, 7, on p 165

*Pp 166-169* Read about the animals which kill rats What kinds of dogs kill rats best? How do barn owls help the farmer? How much money does each of them save him?

*P 171* Do what is asked on this page

#### READING AGE 9-11+

#### "Golden Journeys"

*Read pp 12-24* Answer Questions 1 and 2 How do you know the picture at the bottom of p 24 is Egypt? Find Egypt in your atlas

*Pp 25-31* Read the story of the Gay Gowhowk Now look at the two pictures on pp 25 and 27 Which happened first in the story? Say what is happening in each of them Why did the lady drink the strange medicine? What happened at St Mary's Church?

*Read pp 50-58* Why did the "Swallow" make a forced landing? Find Croydon on p 21 of your atlases Write the words which Quicksilver used to describe what the ground looked like when he was going up and coming down in an aeroplane

*P 98 onward* Describe how Jack found

- (1) His axe
- (2) His shovel.
- (3) His water

*Read pp 152-156* What does Epiphany mean? For whom is La Befana searching? How does she find happiness at Epiphany?

## READING AGE 11+

**"Read, Laugh, and Learn"**

*P 27* Read about Tom Sawyer Answer Questions 1 and 2 on p 31 Put these words into sentences to show what they mean twelve, interest, attention, mischief

*P 31* Read the jokes Notice how the conversations are set out and what punctuation is used Now set out this conversation in a similar way

(1) Father at the Zoo with his small but troublesome son Jimmy

(2) Little boys should be seen and not heard

(3) Jimmy Then lift me Daddy so that the lions can see me

*P 33* Read this story Pick out all the words on pp 35, 36, and 37 which show how fast and furious was the ride

*P 41* Read the joke Answer Questions 3, 4, 5, and 6 Be sure you can spell the words in Question 6

*P 44* Read the account of the tea-party, and then give three reasons why the hatter was called mad

*P 51* Read about Tom Copy out the four lines on p 53 which describe the little girl, then underneath copy those on p 54 which describe Tom's reflection in the mirror There are only three colours needed to paint these two pictures What are they? What noises were there in the room? Pick out the noise words

*P 56* Answer Question 12

*P 57* Read about Lorenzo the Painter Answer Questions 1 and 4 Put these words in sentences calm, guess, language, whisper

*P 60* Read about the Bald Knight Answer Questions 1, 2, and 3



*P 68* Read the story How did the goose oblige the hen? What two parts of the duck are specially suited to swimming and feeding in water?

*P 71* Read about Gulliver, then answer Questions 5 and 7 on p 75

*P 91* Read the story and answer Questions 4 and 5

*P 8* Read the story of the Irishman Use these words in sentences direction, surprised, wondered, bridge, through

*P 49* Read these jokes Do you know a joke or riddle? If so, write it in your book

#### FOR GIRLS—READING AGE 11+

#### **"Setting Out"**

*P 7* Read the story of Frou-Frou Then explain what is happening in the picture on p 7, and the picture on p 11 What kind of a dog was Frou-Frou? Find the country he was named after in your atlases on p 14

*P 13* Read about Florence Nightingale How did she practise to become a nurse? To which country did she go to learn how to look after sick people? Who used to look after people who were ill in hospital when Florence was a girl? Write out the sentence which shows how Florence treated her dog's paw

*Pp 24-27* Write a description of how the 'tailor' bird makes her nest What kind of birds are called miners, carpenters, plasterers, and weavers? What is that queer stuff like a thatch on the tree on p 27?

*Pp 28-31* Why was it a mistake to kill all the birds? What does "A dreadful massacre began" mean?

*Pp 32-34* Write out the paragraph which shows how happy they were Write out the lines which show the sorrow they felt

*Pp 48-52* Why did people think Vera and Elsie were foolish? How did Vera meet with her accident? Describe what is happening in the picture on p 50

*Pp 53-61* Find Yorkshue in your atlases Why is the River Lidd remarkable? What are stalacites and what are stalagmites? How did they find Derrick?

*Pp 70-76* Why was Barbara Deane a good sport? Be ready to read aloud the lines on p 74 beginning, "Another thrill was in store " and ending "with delight "

*Pp 77-81* Regan and Goneril were not good daughters Do you know some words, such as 'deceitful,' which describe their characters? How was King Lear foolish? Whom did you admire most, and why?

*Pp 82-85* How did Roy get Walker's finger-prints? Why would a burglar want to clean windows?

*Pp 117-122* Why was the baby prince given to Sir Ector? What was "Excalibur"? Merlin hid Arthur from all the strong nobles What might have happened if he had not grown up in secrecy?

*Pp 123-129* Look at the picture on p 127 Tell all about it

*Pp 138-143* What did the man mean when he said, "Your enemies call you a Pretender If so, you are the worst at your trade that I ever saw"? What do you think would have happened to Floa MacDonald if Betty Burke had been searched?

*Pp 153-159* Look at the picture on p 151 Who is the gentleman standing listening? Why is Marie delighted when she learns who he is? What does "composed by" mean?

*Pp 160-165* Why was the League of Nations formed? Was the Great War a stupid or a fine thing? Give a reason for your answer

FOR BOYS—READING AGE 11+

**“The Broad Highway”***P 7* Read to p 10

Find Beachy Head, Cape Wrath, and the English Channel in your atlases How many oil rooms are there in the Eddystone lighthouse? What is the oil used for? Why is a lighthouse useless in fog? How are the ships warned then?

*P 11* Read to p 19

To whom did the *Seamew* belong? Write out the lines which show how the storm came on What almost happened to the *Fuefly*? How did the boys save her? How did the stranger reward Terry, Chris, and Evan?

*P 20* Read to p 23

Look at the picture on p 21 What is the man called who sits facing the rowers? What is the rower next to him called? Which of these would you prefer to be?

*P 24* Read to p 32

When Peter saw the white clay and the leopard-skin, what two things did it tell him? Write out the lines on p 31 which are the most exciting—where Peter was just going to be killed Read them to your teacher

*P 33* Read to p 35

Write out three important rules which must be kept if you are to become a good football player

*P 36* Read to p 42

What did the captain say to encourage Peter at half-time? Which team did Peter play for? Who scored the winning goal? Write out the sentence describing the winning shot

*P 43* Read to p 47.

Be ready to answer these questions when your teacher asks them What is the amber light for? Show me how to signal “I am going to slow down” Show me how to signal “I am going to turn to my right” Who must be more careful, the man in a car or the man on foot?

*P 48* Read to p 57

What was the clue which Jeff found when he looked at the smart blue car? How much money had Mr Raleigh stolen? How much reward did Mr Travers and Jeff get for the capture of the car-bandit? Were they any better off?

*P. 58* Read to p 62

Write out sentences which showed how (a) roads, (b) expense, (c) robbers made travelling difficult

*P 63* Read to p 66

How does the pilot steer to the left or right? How does he make the machine go up or down? Look at the picture on p 65 How many people can travel in this aeroplane?

*P 67* Read to p 74

What did Ronald want for his birthday? How did he return to Gosserton after his night out? Were his parents worried at his absence? How do you know?

*P 75* Read to p 83.

Look at the picture on p 79 Who are the two boys? What was that truck once used for? Where does the rail lead to? Look at the picture on p 82 How was Eric's life saved? Which of the three boys was most fitted to be a leader of other boys? Why?

*P 84* Read to p 87

Write out three rules about

- (a) Paper bags and orange peel after a picnic
- (b) Broken glass
- (c) Tram tickets

*P 104* Read to p 111

Who did you think was the thief at first? Who was it really? Why did Lazy Pete think it was Bill Derek?

*P 121* Read to p 129

What did Captain Green mean when he said, "Run up the Jolly Roger"? In what way were most of the pirates captured? Why is the mast to which Captain Jones is being tied broken off?

*P 146* Read to p 153

Do you know any tracking-signs? Draw them if you do and label them with their meaning Here are some. Do you know what they mean?



*P 172* Read to p 176 and pp 112-115

Who helped the people of England more, Jack Cornwell or James Young Simpson? Which kind of a hero would you like to be—one who dies for his country or one who lives and works to help the people in it

#### READING AGE 9-11+

#### "Famous Fables"

*Pp 7-9* How would you rather live, like the thin or the fat cat? Write the sentence which is the most exciting part of the story What is wrong here The fat cat stoped. He tosed the mouth out of his site She had forgotten the taste She was siting on the dorestep?

*Pp 10-13* How did the hare trick the lion and kill him? Begin like this—"The hare tricked the lion by making him believe that " What put this idea into his head? Who was the cleverer, the hare or the lion? How do you know?

*Pp 13-15* Write a story like this, but instead of a deer have a rat, instead of a crow a mouse, and instead of a jackal a cat who wanted to eat the rat Instead of a farmer have a housewife Instead of a field of young corn have some cheese Instead of a wood have the space under the pantry floor

*Pp 22-24* Why did the crocodile have a "long toothy grin"? Put these words in sentences twinkling, wretch, lashing.

*Pp 29-34* Can you think of another fable where an animal who was big and strong and stupid was overcome by one who was weak but clever? Copy out sentences which show how the alligator showed his anger and the jackal his joy

*Pp 34-37* Copy out a sentence from the story which shows how angry the tiger was. What does "Men are vile" mean? Look it up in the dictionary. Why did these animals say this?

*Pp 64-67* How did the stork get his revenge? What is a muzzle? What is a snail? Find the sentence with the words 'graceful' and 'straight' in it. Copy it out.

*Pp 67-69* What do these words mean: boasted, challenge, astonished? Put each in a sentence which shows you know its meaning. Try to draw a tortoise.

*Pp 77-78* "One good turn deserves another." How does this story show this?

*Pp 102-103* Read the story of the sausage. If you had three wishes, what would they be?

#### READING AGE 9-11+

#### "Stories from Everywhere"

*P 60* The Great Wall of China is one of the Seven Wonders of the World. Why and when was it built? Find it on the map of China.

*P 163* Zarifa saved the town by a ruse or trick. She turned a fat calf to graze outside the city, newly fed with corn. Why? Find Algeria in your atlas.

*Pp 1-5* In what way were the old man and Rona like each other? Find all the words on p. 1 which tell you how bad-tempered the old man was. Do you know what really is the cause of the markings on the moon?

*Pp 7-14* Why was Anna Maria different from other children? How do you know that she couldn't help being different? Write a line which rhymes with this one:

"Mother, pass the bread and jam."

Why were the Prince and Anna specially suited to each other?

*Pp 15-19* Write out the lines beginning, "He had not been there very long . croaking of the frogs " Read it through three times and then read it to your teacher On p 18 it says, "If it had not been for that little boy, White Hawk might have lost his wife for ever " How did their son help them?

*Pp 21-26* In giving up the bell for the white stick the shepherd boy chose between two things What were they? Who do you think had the best of the bargain, the little gnome or the shepherd boy?

*Pp 27-31* What is a cormorant? The Chinese train these birds to fish for them They are about the size of ducks, but how would their beaks differ from those of ducks? Read the story on pp 27-31 Why wasn't the cormorant sea-sick? Have you ever torn your clothes on a bramble? Tell how it happened

*Pp 33-38* Why was Gopala afraid as he went through the forest? How did his mother help her little boy? Who was Krishna?

*Pp 39-45* Five people were kind to the talking thrush and two were unkind Describe what each of the kind people did for a living How did the two unkind people earn their money? Do you remember another story in which there is a talking bird?

*Pp 47-54* How did the shepherd guess the "poor traveller" was the Shah or King? Copy out the lines in which the shepherd gives his reasons for thinking this Which proverb on p 54 do you think is the most clever? Find Persia on p 15 of your atlas Name all the countries which touch its borders

*Pp 55-59* Do you know of another story of an ugly monster who turned into a handsome prince when a beautiful maiden fell in love with him? Look at p 15 of your atlas and name two important countries which lie to the north and north-east of China They are coloured yellow and brown

*Pp 61-65* "The next day the Tailor found that all his stitches had been unpicked, the house was dirty, and the chimney full of soot " Explain as fully as you can why this was so

*Pp 67-71* What things taught the man how lonely he was? How did the man know that his wife had gone?

*Pp 79-85* Draw the picture on p 85 Then underneath describe fully what is happening there

*Pp 93-98* Read and then find the description of the way the Leprechaun and Pat rushed to find the crock of gold Make a list of all the words which show best what a mad rush it was

*Pp 99-104* Answer Question 1 on p 104 What title would you give the picture on p 104?

*Pp 113-120* Read Then look at the picture on p 120 This was an old-time Russian wedding-party Who are the two people in the sleigh? Where is Natasha? How can you tell that Russia is a very cold country in the winter?

*Pp 121-127* Why was it so generous of Ianto to say, "Hey, little people, take what you want and welcome, I wish you a good appetite!"? How did the fairies regard his generosity? What caused the luck of the house to go?

*Pp 135-140* This story teaches us "One turn another" Can you fill in the missing words? What good turns did the Prince do? What kind of bride did he seek?

*P 146* Look on p 12 of your atlas There is the picture of a cotton flower and seed On the map of North America the cotton-growing region is marked Find the other two countries where cotton is grown Look at the map on pp 10 and 11 What is the rainfall like in these places? P 9 will tell you how hot it is when the cotton harvest is gathered

*Pp 142-151* This legend is remarkable because many thousands of years after this happened the English engineers actually built "a rocky door" Copy the lines on p 149 beginning "When the time comes land" "The rocky door" is the Aswan dam. Ask your teacher about it Write this, "The Aswan dam stores up the waters of the Nile to prevent drought in Egypt"



*P 152* Read this and then find p 7 in your atlas In the N E of Africa you will find the River Nile It is 3700 miles long and the second longest river in the world You see it flows through a desert Where does it get its water from? The map on p 11 will tell you

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